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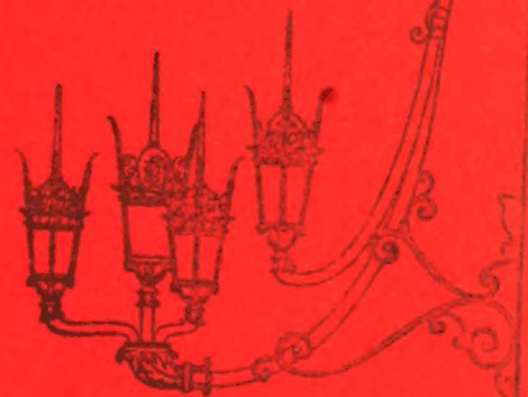
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Vol. 2

FINAL ENVIRONMENTAL IMPACT STATEMENT

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Red Line Extension Harvard Square to Arlington Heights Boston, Massachusetts

U.M.T.A. Project Number

MA-23-9008

August 1977

U.S. Department of Transportation
Urban Mass Transportation Administration



FINAL ENVIRONMENTAL IMPACT STATEMENT
AND 4(f) STATEMENT

U.S. Department of Transportation
Urban Mass Transportation Administration

RED LINE EXTENSION - HARVARD SQUARE
ARLINGTON HEIGHTS, BOSTON, MASSACHUSETTS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

UMTA PROJECT: MA-23-9008

This transportation improvement is proposed for funding under the Interstate substitution provision of the Federal-Aid Highway Program - Title 23 United States Code Section 103 (e) (4).

The statement is submitted pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969 (PL91-190); Section 3(d) and 14 of the Urban Mass Transportation Act of 1964 as amended; Section 4(f) of the Department of Transportation Act of 1966; and Section 106 of the National Historic Preservation Act of 1966.

AUG 16 1977

DATE

By: 

John K. Taylor
Acting Associate Administrator
for Transit Assistance

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Chapter VII

ALEWIFE TO ARLINGTON CENTER

Chapter VII

ALEWIFE TO ARLINGTON CENTER

PROJECT DESCRIPTION

The section of the Red Line Extension from approximately 535' north of Route 2 northwest to Arlington Center--approximately 1.11 miles--would be a rail rapid transit line primarily within the MBTA Lexington Branch right-of-way. A transit station would be located under Massachusetts Avenue at Arlington Center.

The kiss-and-ride and bus unloading facilities and traffic patterns in Arlington Center as described in this chapter are preliminary and are subject to further analysis and development during the ongoing Advanced Engineering phase.

Line Segment

Turnback and storage facilities for the Alewife Station would be extended to 1,235' north of Route 2. The Tunnel/Cut-and-Cover would then continue in a northwesterly direction passing under Lake Street, Linwood Street, and Pond Lane while curving at radii of 2,300, 2,000 and 1,500 feet to remain within the railroad right-of-way. See Figures II-1B and II-1C.

From Route 2 the alignment would consist of a three track cut-and-cover tunnel section which would be a 500' extension of the turnback and storage facilities at Alewife. A typical two track tunnel section will continue from the end of this turnback and storage area to Arlington Center. Due to the relatively flat terrain, the top of the tunnel would remain within 5 to 10 feet of existing ground level and would be gently rolling, with a maximum grade of 0.8 percent at the approach to the Arlington Center Station. Criteria upon which the proposed alignment and profile were based are as follows:

- Acquisition of railroad right-of-way and abandonment of freight service.

- Minimization of recreational and residential land takings by remaining within the MBTA Lexington Branch right-of-way.
- Minimization of adverse visual, noise and vibration impacts to adjacent residential areas by constructing a cut-and-cover tunnel section.
- Continuation of community services and access to recreational and residential areas adjacent to transit line and flexibility for development of a linear park above the covered transit line.
- The maintenance of neighborhood continuity and interaction of local residents by putting the transit line underground.
- The elimination of conditions which might be hazardous to the safety and welfare of the local youth population.

The transit line would consist of two tracks (outbound and inbound) with an emergency crossover track prior to Arlington Center Station.

The design of ventilation systems would be given careful consideration to minimize noise and visual impacts.

The area south of the station, over the tunnel section of the alignment could be utilized by the Town of Arlington for future development of a linear park. This portion of the project would also eliminate much of the existing railroad embankment in the vicinity of Pond Lane, thus improving sight lines between the residential community and Spy Pond. In addition, the free access provided over the project would greatly improve community access to Spy Pond and Spy Pond Field from the northern side of the railroad right-of-way.

The major utilities requiring relocation or support within this section are a 24-inch storm drain at Orvis Circle and a 42-inch storm drain near Elmhurst Street which outlets into Spy Pond. Other utilities include numerous storm drains ranging in size from 15 to 20 inches as well as a 16-inch gas line crossing Lake Street. In addition, there are 20- and 24-inch MDC water mains and a 16-inch gas line under Massachusetts Avenue in the Arlington Center Station area. Treatment of these utilities requires further study during the design phase.

Station

Entry and Exit Points

The cut-and-cover station proposed for Arlington Center would be located within the Lexington Branch right-of-way. The station would extend 440 feet from Whittemore Historic Park southeast to a point midway between Swan Place and Lombard Terrace. Three principal entry/exit points would be incorporated into a street underpass system. See Figure VII-2.

One entrance (West entrance) would be located in the northwest quadrant of Arlington Center, in the Uncle Sam Park, adjacent to the Coolidge Bank, at 635 Massachusetts Avenue. A second entrance (North entrance), connected to the first by an underpass beneath Mystic Street, would be located in the northeast quadrant near the present location of a laundromat at 483 Massachusetts Avenue. This entrance would serve as a direct entrance to the station mezzanine. The third entrance (East entrance) would be connected to the others by a free zone which would serve as a pedestrian underpass below Massachusetts Avenue. Located on a small triangular parcel of land within the Lexington Branch right-of-way at the corner of Massachusetts Avenue and Swan Place, this entrance would serve the east-west flow of pedestrian traffic along the south side of Massachusetts Avenue.

The east entrance could be incorporated into any future redevelopment of the Mirak site, which is located within the triangle of land bordered by Swan Place, Massachusetts Avenue, Whittemore Street and the railroad right-of-way.

Stair, Elevator and Escalator Locations

A stairway would be located at the West and East entrances. The North entrance would be at the mezzanine level, approximately 15 feet below grade. The station platform would be approximately 30 feet below Massachusetts Avenue and access from the mezzanine level to each end loaded side platform would be provided by a seven-foot-wide stairway and a seven-foot-wide escalator.

Provisions for Handicapped and Elderly

A ramp would connect the street level to the North entrance. It would permit handicapped persons to gain access to the station platform, including those persons confined to a wheelchair. The kiss-and-ride area would include one space designed for handicapped use.

Handicapped and elderly persons who are unable to use the stairway entrances would not be able to use the street underpass system incorporated into the station design. It is possible, however, if a mezzanine level connection is made with future redevelopment on the Mirak site, that elevators in the new structures would allow wheelchair handicapped to go from one side of Massachusetts Avenue to the other underground.

Access to the platform from the mezzanine level would be gained through a special wide fare gate. An elevator would be provided for access from the mezzanine to each side platform.

Three alternatives to the proposed surface-to-mezzanine elevator were investigated but later rejected. A ramped entrance to the station mezzanine, located in the retaining wall in the southernmost corner of the Winslow Tower property, was examined. Members of the Arlington Housing Authority and the Council on Aging reacted negatively to this proposed entrance, due to its impact on the limited amount of open space currently available to Tower residents. They were also concerned that people who walked to the station and lived northwest of the Arlington Center Station would use the proposed entrance rather than walking up the hill to the entrance near the Coolidge Bank.

The two other locations which were studied as possible elevator sites were the railroad right-of-way, above the Winslow Tower retaining wall, and near the Swan Place entrance.

Bus Handling Facilities and Parking

Due to the existing heavy north-south traffic, preliminary design efforts attempted to minimize bus left turning movements from Mystic Street. As a result of local disagreement over the garage proposal, the bus handling and parking facilities are currently under redesign.

Fare Collection

Only one fare collection area would be required for the end loaded platforms. The fare zone, which would be separated from the pedestrian underpass system beneath Mystic Street and Massachusetts Avenue, would have two fare booths at opposite ends of a bank of turnstiles. The booths would be situated so that there would be a clear view down the underpass corridors to the entrances; the full-time attendant booth would be located nearer to the southeast entrance as this booth would provide a better view of the three entrance corridors. Special entries will be provided to accommodate the handicapped. See Figure VII-3.

Although the end loaded platform would require pedestrians to walk a greater distance from the southeast entrance, it would not require duplicate fare collection facilities.

Platforms and Intermodal Connections

No intermodal connections with other rail facilities are planned for the Arlington Center Station. Each side platform would be 12 feet wide except at the stairway and escalator level where it would flare to 21 feet in order to provide for the seven feet of clearance at the side of the stairs.

External Emergency and Ventilation Shafts and Other Apparatus

Ventilation shafts for the station would be located in the right-of-way east of Swan Place or west of Mystic Street. Some difficulty may be encountered at either of these sites as they are considered prime locations for future air rights development. Design should not preclude this development possibility.

Skylights could be positioned in the right of way east of Swan Place, particularly if linear park development occurs there. Two sites where skylights are proposed as part of the preliminary station design are adjacent to the southeast station entrance and on the right-of-way over the station mezzanine next to Whittemore Historic Park.

Joint Development Concepts

Transit station construction in Arlington Center is anticipated to provide a catalyst to future commercial and apartment development. The Mirak property, located south of Massachusetts Avenue and north of the railroad right-of-way east of Swan Place, should receive primary consideration if transit parking is deemed necessary in the future. From 100 to 200 transit spaces could be included on the site without creating significant change to Arlington Center traffic conditions during the peak period.

The Mirak site could be directly connected to the MBTA station by extending the southeast entrance on the mezzanine level. A direct connection to below grade transit parking could be made. If the level of site development warrants it, a new fare taking area could be introduced at the southeasternmost end of the station.

Right-of-Way

The primary right-of-way requirement was fulfilled by the MBTA's acquisition of the entire length of the Boston and Maine Lexington Branch right-of-way. Construction of the East Arlington segment of the Red Line would necessitate abandoning this right-of-way through Arlington, Lexington, and Bedford.

Permanent easements would be required above the tunnel as noted in Table VII-1. Two partial takings would be required for the station. One of these would be a small portion of Uncle Sam Park for an entrance, and the other would be a partial taking of Whittemore Park for a skylight above the station.

Table VII-1 presents the parcels of land that would have to be acquired to maintain the continuity of the right-of-way.

Table VII-1

RIGHT-OF-WAY REQUIREMENTS ALEWIFE TO ARLINGTON CENTER

Address

Lake Street Parking Lot	Public	Permanent Easement
10-42 Hamilton Road	Residential	Permanent Easement
590 Massachusetts Avenue	Commercial	Permanent Easement
Swan Place and Massachusetts Avenue	Commercial	Permanent Easement
Whittemore Park	Public	Permanent Easement/ Partial Taking
Coolidge Bank Parking Lot	Commercial	Permanent Easement
Town of Arlington	Public	Partial Taking
Town of Arlington	Public	Permanent Easement

Construction Considerations

The entire transit construction along this segment of the Red Line Extension would be in a tunnel/cut-and-cover section. Tunnel/cut-and-cover construction would also be utilized in Arlington Center Station.

Approximately 1,035 feet of 46' wide tunnel/cut-and-cover section beyond Route 2 in East Arlington would serve as a turnback and storage facility for Alewife Station. Beyond the end of this turnback and storage facility, the tunnel section would transition to a 31 foot width.

Ventilation of the underground transit line would be achieved by the use of a blast relief shaft at the end of the Alewife Station and at the beginning of the Arlington Center Station. In addition, four additional fan shafts would be included in the line segment. All ventilation shafts would be in the Lexington Branch right-of-way. Preliminary locations are as follows:

- Alewife Station
- 100' north of Thorndike Street
- 400' south of Lake Street
- Near Marion Road
- 300' south of Pond Lane
- Arlington Center Station

Reconstruction of Lake, Linwood Streets and Pond Lane over the tunnel would be phased to allow for proper maintenance of traffic.

All buildings within the construction zone of influence would require protective measures to minimize damage caused by settlement or vibration. These requirements would be determined for each case with conventional underpinning being used where a less expensive technique would not provide adequate protection. Other methods to reduce settlement over a wide area include cut-off walls and grouting of soils. All utility lines would be carefully protected or relocated outside the cut-and-cover tunnel section during construction. Strict controls to minimize noise and dust from construction activities would be required to minimize adverse impacts to area residents. Construction areas would be fenced off from access by children. If necessary, security guards could be provided to monitor sites during off-hours.

Major consideration would be given to the maintenance of pedestrian and vehicular traffic during construction. At all street crossings, the excavated areas would be temporarily decked to allow for the uninterrupted movement of vehicles while construction continues below. During the reconstruction of roadways, street traffic would have to be diverted until the work is completed. In the areas of Lake and Linwood Streets, the adjacent ground is level and temporary roadways could be constructed to reroute traffic around the construction site. These temporary detours would be eliminated only after the construction is completed and normal traffic patterns are restored.

During construction of the cut-and-cover section, large amounts of excavated materials may create disposal problems. To avoid impacting nearby residential streets with truck traffic, these materials would be transported within the linear construction zone, whenever possible.

It is estimated that construction of the line segment from Route 2 to Arlington Center would take 36 months; construction of the Arlington Center Station is expected to take about 36 months.

Table VII-2

ESTIMATED CONSTRUCTION TIME

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
Alewife to Arlington Center					
Arlington Center Station					

Costs

Estimated construction costs for the project are presented in Table VII-3. These estimates are for the line segment from Route 2 to the beginning of Arlington Center Station and for the station complex. The costs do not include project wide items such as floating slabs, trackwork, ventilation, electrification, signalization, and communications. For these costs, see Chapter II. The estimate is based on midpoint of construction Dollar value.

Table VII-3

CONSTRUCTION COST ESTIMATES
NORTH OF ALEWIFE TO ARLINGTON CENTER
(Costs do not include project wide items)

<u>Item</u> (Tunnel/Cut-and-Cover)		<u>Cost</u>	
<u>MAC Code</u>	<u>Description</u>	<u>Amount</u>	
15.13.00	Transit Structure	\$28,433,000	
15.13.10.12	Utility Relocation	775,000	
			\$29,208,000
15.06.10	Right-of-Way	50,000	
			50,000
15.08.01	Professional Services	1,460,500	
15.08.02	Field Inspection	902,500	
15.15.02	Force Account	584,000	
15.16.00	Project Administration	1,812,000	
			4,759,000
	Subtotal		\$34,017,000
32.00.00	Contingencies		2,921,000
	Total		\$36,938,000

Arlington Center Station (Cut-and-Cover)

<u>MAC Code</u>	<u>Description</u>	<u>Amount</u>	
15.11.10	Station Structure	\$11,448,000	
			\$11,448,000
15.06.10	Right-of-Way	1,000,000	
31.00.00	Relocation	--	
			1,000,000
15.08.01	Professional Services	572,500	
15.08.02	Field Inspection	354,000	
15.15.02	Force Account	172,000	
15.16.00	Project Administration	728,500	
			1,827,000
	Subtotal		\$14,275,000
32.00.00	Contingencies		1,145,000
	Total		\$15,420,000
	Total for Segment		\$52,358,000

ALTERNATIVES

Line Segment

Two alternatives considered for the section of the project between Alewife and Arlington Center were an at-grade alignment and a cut-and-cover/tunnel alignment with an at-grade railroad operation above it.

At-Grade Alternative

Under this alternative, the alignment would be in tunnel/cut-and-cover at each end with combinations of at-grade and depressed sections being used to pass under all the existing streets in the line segment. Lake and Linwood Streets would be bridged due to the dangers inherent in frequent transit crossings and third rail electrical power associated with grade crossings. A new transit bridge would be required at Pond Lane and a new pedestrian overpass would replace the existing underpass at Whittemore Street.

The profile of the transit line from Alewife Station would pass under the Concord Turnpike (Route 2) in a tunnel/cut-and-cover and immediately ascend to the existing grade. About 500 feet west of Route 2, along the existing MBTA Lexington Branch right-of-way, the profile would be at grade for a short distance and would then pass under Lake Street, descending on a two percent grade to a depressed section. To return to grade level, the line would ascend on a two percent grade after passing under Lake Street. Since Linwood Street must be kept open for vehicular traffic because of its use as a fire lane to the Spy Pond Apartment Complex, the transit line would pass under the street in a depressed section, descending on a 2.5 percent grade and ascending on a 3.0 percent grade. The line would then pass over Pond Lane, descending into Arlington Center Station in cut-and-cover construction.

Right-of-way requirements for the at-grade alternative would be the same as those described under Project Description.

This alternative would continue from Alewife Station in a tunnel/cut-and-cover to a portal just west of Route 2 where it would pass into a depressed section with retaining walls or, if warranted by hydrostatic conditions, a depressed/boat section would be used. The retaining walls would vary in height due to the constant transitioning. Wherever possible, a depressed open section near existing grade would be utilized to eliminate the need for retaining walls. At-grade portions of the construction would entail the reconstruction of existing embankments and the installation of four-foot-high noise barriers. The at-grade sections would also require reconstruction of the subgrade as well as new ballast for the two transit tracks. Security fencing along the edge of the right-of-way would be required to preclude pedestrian access. From the proposed portal beyond Pond Lane, Arlington Center Station would be constructed by cut-and-cover methods.

Construction of the at-grade alternative from Alewife to Arlington Center would take about 24 months; construction of the Arlington Center Station would take about 36 months. This construction sequence is shown in Table VII-4.

Table VII-4

ESTIMATED CONSTRUCTION TIME
AT-GRADE ALTERNATIVE

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
At-Grade to Arlington Center					
Arlington Center Station (Cut-and-Cover)					

Estimated construction costs for the at-grade alternative are presented in Table VII-5.

Table VII-5

ESTIMATED CONSTRUCTION COSTS
AT-GRADE ALTERNATIVE
ALEWIFE TO ARLINGTON CENTER
(1975 Dollar Value)

Transit Structure	\$ 8,460,000
Floating Slab	2,640,000
Trackwork	3,605,000
Electrification	1,923,000
Signaling	1,370,000
Ventilation	200,000
Utility Relocation	450,000
New Bridges	340,000
Fencing	170,000
Remove Railroad Track	98,000
Subtotal	<u>\$19,256,000</u>
Other Project Costs	4,814,000
Total	<u>\$24,070,000</u>

The at-grade alternative would be the least expensive alternative. However, due to community opposition toward a visible rapid transit system in the Town of Arlington and the Board of Selectmen's position on a covered transit line this alternative is not recommended. In addition, any linear park concept envisioned by Arlington would not be feasible due to at-grade operation of the transit line and limited right-of-way.

Dual Transit and Freight Operation

As proposed in the BTPR report and concurred with herein, the most efficient and viable transit line, regardless of construction method, would be achieved with the abandonment of rail operations within the MBTA Lexington Branch right-of-way. If, after ICC review, it is determined that rail freight service must be retained, a dual transit and freight system would, by necessity, become the option through arlington.

The existing alignment of the MBTA Lexington Branch consists of an at-grade, one-track rail line with grade crossings at Lake and Linwood Streets and grade separations at Route 2, Pond Lane and the Whittemore Street pedestrian underpass. Topography adjacent to the railroad is essentially flat throughout the East Arlington area. In the vicinity of Linwood Street, however, a large cut slope is encountered on the northerly side. From the Linwood Street area the railroad begins to ascend toward Arlington Center, reaching grade level before crossing Swan Place and Massachusetts Avenue in Arlington Center.

Arlington Center presently is the junction of three major arterials, Route 60, 2A and 3 as well as the major commercial center of a community of 53,000 people. Arlington Center experiences traffic backups for about one-quarter of a mile in all four directions as a result of the at-grade freight line. The Town officials and residents feel strongly that a combined freight and transit operation would seriously impact traffic and pedestrian activity.

The dual transit and freight line alternative assumes the retention of the one-track freight line and construction of a two-track rapid transit system under the MBTA Lexington Branch right-of-way in tunnel/cut-and-cover. The other methods which might be used to combine these two systems are not feasible in Arlington for the following reasons:

- A three-track system constructed at grade, in a depressed alignment, or in combinations thereof would require at least a 50-foot wide right-of-way. In many areas, this would necessitate extensive residential, commercial, and public land takings.

- In addition to the substantial construction expense, elaborate and expensive exhaust systems would be required for a cut-and-cover freight line.
- A depressed or cut-and-cover freight alignment would result in poor operational gradients for the freight line.
- Cut-and-cover and depressed freight line concepts would require 800 to 1,000-foot transitions to reach at-grade siding elevations. Sixty-six-foot-wide right-of-ways would be required in these four-track transitional areas.
- In several of these dual system concepts, egress for freight sidings would have to be provided in the perimeter safety fencing required for the electrified transit line.
- Existing freight users are located both north and south of the right-of-way. At-grade or depressed sections would require grade separated structures in order to maintain service.

For the above reasons, the only feasible dual system for Arlington appears to be an at-grade freight line with a transit line in a tunnel/cut-and-cover.

Under this alternative, the transit line would be entirely underground and the ambient character of East Arlington would not be altered. The one-track freight line would be reconstructed in its present alignment, including the grade crossings at Lake and Linwood Streets, and would remain at grade across Massachusetts Avenue. Grade separation structures and embankment sections adjacent to Spy Pond would also be retained. The linear park concept would, however, have to be modified due to the at-grade freight line. The freight line would pass over the Arlington Center Station; the station configuration would generally be the same as described earlier except for minor modifications to the northwest entrance and plaza.

The profile for this alternative is relatively flat with little variance; therefore, all grades would be minimal except in the area beyond Pond Lane where the profile would ascend on a two percent grade to the Arlington Center Station. The average cover for the profile would range from five to ten feet, thus allowing utilities to cross the tunnel section.

Right-of-way requirements for the dual transit and freight system would be the same for the project; no additional land takings would be required.

Sufficient ventilation for the transit tunnel would be achieved by the use of air relief shafts at both the Alewife and the Arlington Center stations. In addition, two fan shafts and two emergency ventilation shafts would be included in the tunnel construction between the stations. All ventilation shafts would be within the Lexington Branch right-of-way. Preliminary locations are as follows:

- Two fan shafts; one near Osborne Road and one near Orvis Circle.
- Two ventilation shafts; one near Linwood Street and one near Whittemore Street.

A 700-foot extension of the turnback and storage area for Alewife Station consisting of three tracks would be constructed within the tunnel beyond Route 2 in East Arlington.

Although ground vibrations from the area adjacent to the tunnel might impact neighboring buildings, there are several measures such as floating trackbeds, continuously welded rails and deep ballast which could be used to minimize or eliminate this effect.

Methods of retaining freight service during transit construction would depend on the width of the MBTA Lexington Branch right-of-way. In areas south of Lake Street, the rail line could be temporarily relocated adjacent to the transit line. As transit construction is completed, the freight line would be relocated to its original alignment over the transit line. North of Lake Street, where the right-of-way is only 40 feet wide, construction of the reinforced concrete box section of the tunnel/cut-and-cover would be

staged in two sections. One-half of the concrete box would be completed and the railroad would be relocated over the finished section; the remaining section would then be completed. This staging technique would assure continued freight service during transit construction. Careful consideration would have to be given to the underpinning of structures adjacent to the freight line.

Vehicular and pedestrian traffic would be maintained and protected during the construction period; necessary precautions would also be taken to maintain existing utilities. Construction would be staged at all cross streets. Tunnel construction would continue under temporary decking.

Upon completion of the work, the temporary decking would be removed; the excavated area would be backfilled and properly compacted; and the street would be reconstructed.

Construction of this line alternative from Alewife to Arlington Center would take about 42 months and construction of the Arlington Center Station would take 36 months. See Table VII-6.

Table VII-6

ESTIMATED CONSTRUCTION TIME
DUAL TRANSIT AND FREIGHT LINE ALTERNATIVE
ALEWIFE TO ARLINGTON CENTER

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
Tunnel/Cut-and-Cover to Arlington Center					
Arlington Center Station					

Estimated construction costs for the dual transit and freight line alternative are presented in Table VII-7.

Table VII-7

ESTIMATED CONSTRUCTION COSTS
DUAL TRANSIT AND FREIGHT LINE ALTERNATIVE
ALEWIFE TO ARLINGTON CENTER
(1975 Dollar Value)

Transit Costs

Transit Structure	\$22, 588, 500
Floating Slab	3, 360, 500
Trackwork	3, 605, 000
Electrification	1, 922, 000
Signaling	1, 528, 000
Ventilation	1, 160, 000
Remove Railroad Track	98, 000
Utility Relocation	454, 000
Deck and Repairing	46, 000
Subtotal	<u>\$34, 762, 000</u>
Other Project Costs	8, 691, 000
Transit Cost	<u>\$43, 453, 000</u>

Railroad Costs

Signaling	\$ 285, 000
Trackwork	1, 046, 000
Fencing	171, 000
Subtotal	<u>\$ 1, 502, 000</u>
Other Project Costs	375, 000
Total Railroad Costs	<u>\$ 1, 877, 000</u>

Transit Cost	\$43, 453, 000
Railroad Cost	1, 877, 000
Total	<u>\$45, 330, 000</u>

If the ICC rules that freight service must be retained, this alternative would be the most viable. Its advantages include minimal land takings, elimination of utility relocations, and the fact that the two systems would be functionally independent. Its disadvantages are its community and engineering limitations. Implementation of this alternative would also preclude the proposed linear park over the transit line from Route 2 to the Arlington Center Station.

TRAFFIC AND TRANSPORTATION

Existing Conditions

The Arlington Center Station would be located on Massachusetts Avenue at its intersection with Mystic Street/Pleasant Street. The estimated 1975 Average Daily Traffic (ADT) and the forecast 1980, 1985 and 2000 ADT on the major approach streets to the station are shown in Table VII-8.

Table VII-8

ESTIMATED AVERAGE DAILY TRAFFIC * ARLINGTON CENTER STATION

<u>Route</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>2000</u>
Mystic Street (N)	12,300	12,800	13,300	15,000
Pleasant Street (S)	18,400	19,200	19,900	22,400
Massachusetts Avenue	17,400	18,100	18,800	21,200

* Source: TOPICS

The BTPR study indicated that traffic congestions is the primary problem associated with locating the Arlington Center Station at this intersection. The Areawide TOPICS Plan (ATP) for Arlington also identified this intersection as one which experienced an unusually high degree of traffic congestion as well as the highest number of accidents recorded in Arlington. In recent years, two

car-train accidents have occurred at the railroad grade crossing on Mystic Street; a similar accident also occurred at the Mill Street grade crossing in 1970. These locations, along with the intersection of Swan Place and Massachusetts Avenue, have high-frequency accident rates, which have been documented by Arlington police records.

Currently, trains cross the Massachusetts Avenue-Mystic Street/Pleasant Street intersection three times per day. Approaching trains trip a switch which causes all traffic lights in the intersection to turn red. These delays last about two to three minutes, according to the Director of Community Safety, and traffic backups extend for about one-quarter mile in all four directions.

Switching operations at the former New England Farms plant caused traffic delays at Mill and Water Streets. Trains in the midst of switching operations do not always pull back far enough from the street crossing to trip the stoplights, causing hazardous conditions for drivers. Switching normally takes from 20 to 25 minutes, during which time traffic is intermittently stopped on the affected street.

Existing traffic conditions in Arlington Center are typically free-flow with high operating speeds, except during peak travel periods. High vehicular volumes eastbound along Massachusetts Avenue, particularly during the morning peak, contribute to delay at the Massachusetts Avenue/Mystic Street intersection. Similarly, the intersection of Mystic Street and Chestnut Street exhibits congestion delay, due to the large volumes of traffic traveling westbound on Chestnut and turning southbound on Mystic. Turning movements at the intersection of Massachusetts Avenue, Mystic Street and Pleasant Street are often obstructed. During the evening peak, large traffic volumes occur along Broadway and Massachusetts Avenue westbound, however, stable flows are generally maintained. Other streets in the station area are generally residential in nature with low vehicular capacities.

Station Boardings

It is estimated that a Red Line Extension to Route 128 or Arlington Heights would generate approximately 5,400 inbound boardings per day at the Arlington Center Station. Table VII-9 shows estimated daily 1980 inbound boardings at the Arlington Center Station by mode of access.

Table VII-9

ESTIMATED 1980 DAILY INBOUND BOARDINGS*
ARLINGTON CENTER STATION
(All Alternatives)

<u>Mode of Access</u>			
<u>Walk-In</u>	<u>Bus</u>	<u>Kiss-and-Ride</u>	<u>Total</u>
1,884	1,532	2,014	5,430

*Source: CTPS with no provision for parking assumed.

If the Red Line is extended beyond Alewife, the station at Arlington Center would provide Arlington residents with direct access to Red Line rapid transit service to downtown Boston. The station would be the focal point of Arlington Center. Table VII-10 shows the estimated 1980 peak-hour kiss-and-ride arrivals at the Arlington Center Station by access route.

Table VII-10

ESTIMATED 1980 PEAK-HOUR KISS-AND-RIDE ARRIVALS*
ARLINGTON CENTER STATION
(All Alternatives)

<u>Access Route (D)(a)</u>	<u>Kiss-and-Ride</u>
Mystic Street (N)	382
Pleasant Street (S)	40
Massachusetts Avenue (E)	58
Massachusetts Avenue (W)	94

(a)(D) - Denotes direction from which arrival originates, i.e.,
(N) = from the north).

*Source: CTPS with no provision for parking assumed.

Table VII-11 shows the estimated feeder bus requirements to satisfy the anticipated peak-period demand along with the 1977 existing bus supply and the proposed bus supply strategy, under which existing bus service has been modified to accommodate the Red Line Extension.

Table VII-11

ESTIMATED PEAK-PERIOD FEEDER BUS
REQUIREMENTS AND SUPPLY STRATEGY*
ARLINGTON CENTER STATION
(All Alternatives)

Peak Period Bus Requirements

<u>Approach Direction</u>	<u>Existing 1977</u>	<u>Proposed</u>
North	49	24
South	5	12
TOTAL	54	36

Peak Period Bus Arrivals

<u>Access Route</u>	<u>Existing 1977</u>	<u>Proposed</u>
Mystic Street (N)	8	8
Pleasant Street (S)	-	8
Massachusetts Avenue (S)	30	12
Massachusetts Avenue (N)	32	16
Medford (N)	14	18
Broadway (S)	8	8
TOTAL	92	70

*Source: MBTA

Impacts

Based on estimates prepared by the CTPS, the unsatisfied parking demand at the Arlington Center Station would be 2,200 vehicles per day. It is anticipated that a re-evaluation of access mode, by potential park-riders, could diminish the unsatisfied demand by approximately 460 vehicles because of diversion to another mode of access. The CTPS estimated approximately 330 park-ride vehicles per day would divert from Arlington

Center to the larger Alewife garage, further diminishing the unsatisfied demand. The "excess demand" (i.e., that portion of the unsatisfied demand which would not divert to Alewife or choose another access mode), of 1,410 vehicles per day or more, could either drive to the station and seek on-street parking space or choose not to use the Red Line for their trips. Either alternative would adversely affect transportation in the northwest subregion. Table VII-12 summarizes the parking demand at Arlington Center Station.

Table VII-12

ESTIMATED 1980 PARK-RIDE DEMAND AT
ARLINGTON CENTER STATION *

<u>Unsatisfied Demand</u>	<u>Unsatisfied Demand Diverted To:</u>			<u>Excess Demand</u>
	<u>Kiss-Ride</u>	<u>Bus</u>	<u>Alewife</u>	
2,200	180	280	330	1,410

* Vehicles per day; Source: CTPS; Arlington Heights Terminus with no provision for parking at Arlington Center assumed.

A Red Line station at Arlington Center would result in a slight decrease in daily and peak-hour traffic volumes due to the diversion of auto trips to transit; however, this would be offset by an increase in vehicular traffic attracted to the station. Table VII-13 shows the estimated daily and peak-hour net change in traffic volumes at the Arlington Center Station.

Table VII-13

ESTIMATED 1980 NET CHANGE IN TRAFFIC VOLUMES
ARLINGTON CENTER STATION

<u>Alternative Terminus</u>	<u>Daily</u>	<u>Peak-Hour</u>
Route 128	+3200	+600
Arlington Heights	+3500	+700

A significant impact of the proposed Arlington Center Station would be the additional traffic attracted to the Massachusetts Avenue-Mystic Street/Pleasant Street intersection. This intersection is already operating at capacity and experiences substantial congestion; an additional 300 vehicles (bus and kiss-and-ride) could be expected to pass through the intersection during the peak hour. The Mystic Street-Chestnut Street intersection could experience approximately 400 additional peak-hour vehicles. During the morning and evening peak hours, existing traffic conditions at the Massachusetts Avenue-Mystic Street/Pleasant Street intersection are characterized by unstable flow and substantial delay (level of service E). Major congestion occurs due to the large peak-hour traffic volumes on Mystic Street, north of the intersection, and on Pleasant Street, south of the intersection. If no intersection improvements are made, peak-hour traffic flow would be severely restricted resulting in traffic jams and substantial delays.

Direct Red Line service between Arlington Center, Harvard Square and downtown Boston could result in curtailment of the existing express bus service along Massachusetts Avenue. The faster, parallel service provided by the Red Line is expected to be more attractive than bus service for this trip movement; however, feeder bus arrivals at the station would contribute to the on-street congestion during peak hours. Without off-street facilities for all bus loading/unloading activities, traffic conflicts are likely to occur near bus stops in the station area, especially along Massachusetts Avenue.

The Arlington Center area would be subject to traffic impacts caused by transit users bound for both the Arlington Center and Alewife stations. Based on estimates supplied by the Arlington Department of Planning and Community Development, through traffic bound for the Alewife Station could range from 100 peak-hour vehicles, with either Arlington Station as a terminus, to 480 peak-hour vehicles if Alewife is the terminus of the Red Line Extension. With an Arlington Heights terminus, transit traffic destined for Arlington Center was estimated to be approximately 220 peak-hour vehicles; if Arlington Center is the terminus, that figure could increase to 250 peak-hour vehicles. Table VII-14 summarizes these estimates for alternative terminals at Alewife, Arlington Heights and Arlington Center.

Table VII-14

TRANSIT-BOUND TRAFFIC TO/THROUGH ARLINGTON CENTER

		Peak-Hour Vehicles		
		<u>Kiss-Ride</u>	<u>Park-Ride</u>	<u>Total</u>
<u>Alewife Terminus</u>				
.	Alewife destination	60	420	480
<u>Arlington Heights Terminus</u>				
.	Alewife destination	-	100	100
.	Arlington Center destination	220	-	220
<u>Arlington Center Terminus</u>				
.	Alewife destination	-	100	100
.	Arlington Center destination	250	-	250

Source: Arlington Department of Planning and Community Development

Mitigating Measures

Implementation of traffic flow improvements, including signal modifications, channelization and street-widening, would offset the negative impacts of Red Line Traffic and could improve traffic flow beyond what is presently experienced. A proposed improvement plan for the Massachusetts Avenue, Mystic Street, Pleasant Street intersection is shown in Figure VII-6. Peak traffic conditions would be characterized by minor delay with satisfactory operating speeds. Appropriate signal timing could maintain traffic flow at Level-of-Service D. Relatively stable conditions are expected to occur at the intersection of Mystic Street and Chestnut Street.

A park-ride/kiss-and-ride facility providing park-ride transit spaces at the Mirak site would contribute to stable traffic flow at the intersection of Massachusetts Avenue, Mystic Street and Pleasant Street. The additional facility would divert vehicles approaching from the south and west and would minimize turning conflicts at the intersection. Alternative II would include entry/exit to

the facility as part of the Massachusetts Avenue/Medford Street signal. The intersection of Massachusetts Avenue, Medford Street and the Mirak entrance would be expected to exhibit free traffic flow, without significant delay, during the morning peak. During the PM peak, drivers would experience some delay and a decrease in operating speeds due to turning movements. It is estimated that a parking capacity of 100 spaces could be provided at the Mirak site without adversely impacting traffic flow in the area, reducing the impacts of the unsatisfied parking demand at Arlington Center.

LAND USE

Existing Conditions

The land uses which abut the right-of-way along the proposed transit alignment from Alewife to Arlington Center are, almost without exception, uses which are sensitive to negative environmental impact. See Figures II-1C & II-1D. About 50 percent of the right-of-way is abutted on one side by publicly owned open space: playgrounds and wetlands. The remaining area is residential, with the only site of concentrated commercial use at the Arlington Center Station. The policies of the Town of Arlington seek to perpetuate this land use configuration with more emphasis on recreational uses along the rail corridor as well as a greater concentration of commercial uses in Arlington Center in the future.

The area just north of Route 2 consists of a small area of wetlands and Thorndike Playground. Between these open spaces and Arlington Center, residential areas, consisting principally of one- and two-family homes are adjacent to the right-of-way. Between the south side of the right-of-way and Spy Pond Parkway, land use is also one- and two-family homes and an apartment complex located between Spy Pond Parkway and Scannel Field. The south side of the alignment between the western boundary of the apartments and Arlington Center is used for recreation with the exception of a small group of homes at Pond Terrace and Pond Lane. Recreational facilities include a baseball field at Linwood Street, the Pond Lane Park and Tot lot, the Arlington Boys Club and Spy Pond Field.

From Route 2 at Alewife to Arlington Center, the existing MBTA Commuter Railroad line is predominantly at grade, rising on an embankment from Linwood Street to Arlington Center. The tracks are poorly maintained and the right-of-way is neither landscaped nor fenced. Grade crossings occur at Lake and Linwood Streets with a bridge over Pond Lane. At the eastern end of Spy Pond Field, a pedestrian underpass connects Whittemore Street and Pond Terrace.

Arlington Center is largely commercial along Massachusetts Avenue, with the exception of institutional uses in the southwest quadrant of the intersection of Massachusetts Avenue and Mystic Street. Most of the commercial office buildings are two stories in height, in sharp contrast to Winslow Tower, the 14 story highrise apartment for the elderly which is located at Winslow and Mystic Streets. Mystic Street was relocated during the 1950's to create a direct north-south connection between Mystic and Pleasant Streets. A large municipal parking area occupied the old Mystic Street right-of-way and an area known as Russell Common at the corner of Mystic and Chestnut Streets. Parking areas, both privately and publicly owned, are located between the MBTA Commuter Rail tracks and Winslow Tower as well as in the area surrounding an abandoned railroad station which is presently owned by the town, as shown on Figure VII-1. Public parks are located on both sides of Mystic Street at its intersection with Massachusetts Avenue. To the west is a park honoring Samuel Wilson, the progenitor of "Uncle Sam"; on the east, Whittemore Historic Park honors one of Arlington's Revolutionary War heroes. North of the Center, there are only a few scattered patches of light industrial use; most of the land is occupied by residential structures, largely multi-family units, two-family homes, and apartments.

As it passes through Arlington Center, the MBTA Commuter Rail right-of-way enters from the southeast on an embankment necessitated by a rapidly rising ground slope in the vicinity of Massachusetts Avenue. It crosses Massachusetts Avenue as well as Mystic Street, Water Street and Mill Street at grade. At Water Street, a large vacant food processing plant with four rail sidings is located on the north side of the right-of-way. A fifth siding, used principally by Larson and Sons, a distributor to lumber yards, is publicly owned. The south side of the right-of-way is residential. At the Mill Street intersection with the right-of-way, Brigham's ice cream plant

occupies the southwest quadrant; Malcolm G. Stevens, a manufacturing plant, is located in the northeast quadrant; and a produce store is located on the northwest corner of Mill and Summer Streets. A large parcel to the southeast is currently vacant although its owner, Adamian Construction and Development Corporation, has presented plans for a high density housing project to the Arlington Redevelopment Board.

The Arlington Center - Mill Brook Valley Plan, published in September 1975, includes a "linear park traversing the entire length of the Town...built over the submerged transit line". From contacts with the Arlington Redevelopment Board, the Department of Planning and Community Development and the Arlington Board of Selectmen, it would appear that the linear pedestrian connection is a strong policy at the present time, although it was not fully developed when the Selectmen established their position for underground construction of the Red Line transit system in May of 1973. The principal reasons underlying the policy of the municipal organizations included the following salient points:

1. "The ROW connects all of the major recreation facilities in the Town."
2. "It is presently used by a substantial number of pedestrians making trips to shop in Arlington Center, to schools and to recreation facilities. Field reconnaissance has fully verified this."
3. "The ROW offers a more immediate possibility as a linear pedestrian and bicycle connection than does property and easement acquisition along Mill Brook. The Mill Brook Valley Plan estimates that implementation of the latter might not be complete for forty to fifty years."
4. "The proposed Mill Brook Linear Park would not provide the needed linkage in East Arlington. Recreation facilities at Spy Pond Field, Arlington Boys' Club and Thorndike Playground are intensively used by residents from that neighborhood and from throughout the Town."

5. "The linear connection through Arlington on the ROW creates the opportunity for a regional biker-hiker trail system connected to the Great Meadows, Alewife Brook and the Mystic Lakes. The Metropolitan Area Planning Council is interested in developing this option."

Planning Concepts

The Town of Arlington has documented its plans for a park on the MBTA Commuter Rail right-of-way on a number of occasions. In 1964, the Arlington Center Commercial Development Plan was formulated. Dober and Associates, in 1972, conducted the Arlington Open Space Study. The most recent study, the Arlington Center - Mill Brook Valley Plan, was completed in 1975.

Some of the ideas which were originally generated in the 1964 plan are also included in the present study. Goals of the Arlington Center Commercial Development Plan were:

"...to achieve a system of service streets around the main commercial and public facilities, to improve and augment off-street parking areas, to provide a separate and continuous system of pedestrian walkways connected to the four quadrants of the Center, to enhance the established Civic Center and to create opportunities for new private investment consistent with local goals and metropolitan development trends."

A major feature of the plan was the construction of a street which would connect Winslow Street with Water, Central and Mill Streets. Another goal was to provide grade level pedestrian walks across Massachusetts Avenue east and west of the Center as well as across Mystic Street. The plan also shows Swan Place closed off at Massachusetts Avenue with a transit station entrance developed over the railroad right-of-way.

The Arlington Center - Mill Brook Valley Plan, published September 1975, was conceived after the Red Line Extension proposal was presented. Major Post Red Line development is recommended for three of the Arlington Center quadrants:

Northeast Quadrant

- Develop a major retail office complex on property fronting Massachusetts Avenue from Medford Street to Mystic Street. A department store or large office building, a Red Line station entrance with a subterranean concourse to the transit platform are deemed appropriate.
- Attempt to close the open space at Whittemore Park to give a continuous shopping edge to the north side of Massachusetts Avenue as it crosses Mystic Street. The park, which may have to be temporarily removed during Red Line construction, should be replaced and integrated with any new development.
- Construct a garage in the Russell Common Municipal parking area for joint Red Line and business use. Transit parking should include 300-500 spaces. Total capacity must consider transit and business demand, appropriate design for the site, and the overall carrying capacity of the street network. The design should include visibility from Massachusetts Avenue and should be buffered from school and church uses on Medford Street.

Southeast Quadrant

- Develop a major mixed use project of ground floor retail and multi-floor office above, high density residential designed to respect the low density uses of Whittemore Street, and a joint development underground garage which includes some Red Line parking. Access to the MBTA station should be provided. A phased development plan should provide for post Red Line expansion of the project on air rights over transit at the southwest corner of the site.
- Widen sidewalks along the south side of Massachusetts Avenue and provide pedestrian amenities such as benches, trees and lighting.
- If adequate access can be found elsewhere, close 220 feet of Swan Place at its intersection with Massachusetts Avenue. The abandoned right-of-way should be used in conjunction with the subway entrance, linear park, and new development.

Northwest Quadrant

- Develop frontage on Massachusetts Avenue from Court Street to Mystic Street with ground floor commercial and upper floor office space. Include a 150-300 car garage located behind Massachusetts Avenue frontage. Development should be coordinated with the location of a subway entrance by the Uncle Sam Park. The Town can influence development through its ownership of land in the area. Railroad Avenue should be closed.
- Develop medium density housing or a relocation site for historic structures. This would be contingent on the closing of New England Farms due to displacement of rail freight service by transit.
- Develop a linear park over the cut-and-cover transit line from Water Street to Mystic Street.
- Examine the feasibility of construction of a new road over the cut-and-cover transit line connecting Winslow Street and Mill Street. The right-of-way should include pedestrian and bicycle facilities which maintain continuity of the linear park over the transit.

The Arlington Center elements of the plan emphasize the need for a number of dispersed parking facilities to limit traffic congestion on existing streets. Included is a re-evaluation of TOPICS plans in light of Red Line planning. The Department of Planning and Community Development assumed responsibility for the TOPICS program in 1975. The Department has agreed with the Massachusetts Department of Public Works to relate TOPICS improvements to the rapid transit extension. Once Red Line plans have passed the environmental review stage, implementation of a TOPICS program where possible, before Red Line construction, is recommended.

One idea which is receiving much consideration is that of closing Broadway between Franklin Street and Massachusetts Avenue. The closed portion of the street would be utilized for diagonal parking to serve adjacent businesses. Alton Street would be closed at its intersection with Broadway. Implementation of this plan would allow improvement of signalization at the Massachusetts Avenue/Broadway/Medford Street intersection.

The Arlington Board of Selectmen's policy regarding the Red Line Extension in Arlington is that it should continue through the Town to Route 128 and that it be underground as it passes through Arlington. Their restatement of this policy on April 16, 1975, reinforced their position without any substantive changes and reflects a concern regarding the transit facility as a physical barrier. The existing railroad embankment and the depressed section toward Arlington Heights are presently viewed as a barrier between neighborhoods on opposite sides of the right-of-way. Other documented concerns include the possible introduction of noise in residential and recreation areas along the Red Line and additional traffic in the vicinity of the transit stations. To remove the physical barrier created by the existing railroad and develop a positive contribution to the resources of the Town, local officials have proposed that a linear park be developed above and parallel to the depressed transit right-of-way.

On February 9, 1976, the Arlington Board of Selectmen restated their policy on the Red Line in a Public Policy Statement in which they gave unanimous support to the extension from Harvard Square to Lexington through Arlington via the MBTA Commuter Rail right-of-way. Their position included a firm commitment to any funding and construction strategy through Arlington Center as the first phase. On May 5, 1976 they revised their position to express opposition to an aboveground parking structure on the Russell Commons and to a terminal, either temporary or permanent, at Arlington Center. On October 14, 1976, they further revised their position in a Red Line Policy Statement as follows: "The official position of the Board of Selectmen is that we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals, namely, that of an underground configuration, throughout the Town; that there will be no terminus in Arlington, temporary or permanent, and that it will ultimately extend to Route 128; further that although we will cooperate in any way to assist in developing the information, citizen input and plans to accomplish these and related goals and objectives, we rescind our support until the total package has been produced acceptable to the citizenry of this community. Said action is not to be construed as lack of support for the concept of mass transportation through the development of the Red Line."

On April 13, 1977, a resolution was adopted at the Annual Town Meeting which stated that the Town will not support a proposal of the MBTA to construct an extension of the Red Line in Arlington until such time that prior to such construction it shall develop a satisfactory proposal which conforms to the wishes of the People of Arlington; that the extension be completely of an underground and covered configuration; that it be completely through the Town of Arlington with no temporary or permanent terminus; and that construction be done in one single phase.

The independent Citizen's Involvement Committee of Arlington conducted a broad based survey on land use during 1975. Survey forms were mailed to over 3,000 households; 862 usable surveys, or 28 percent were returned. A special section of the survey was devoted to the Red Line Extension. Half of the respondents identified the transit extension as "the first thing the Town should work on regarding transportation". More than half of respondents thought it was a good idea to extend the Red Line to Alewife and to Arlington Heights by means of underground construction. More than half thought that commercial activity in Arlington would increase as a result of the extension. Responses regarding perceived impacts on parking, pedestrian congestion and traffic congestion were split depending upon whether the person favored the Red Line or not. Those favoring transit tended to believe that parking problems, congestion and property taxes would decrease or remain the same, while those who chose other transportation priorities felt that problems and taxes would increase.

In the northeast quadrant Massachusetts Avenue frontage between Mystic and Medford Streets is zoned B3 in the new Bylaw, for small retail, service and office establishments. The permissible FAR in this zone is 1.4. Along with all other municipal holdings, Russell Common is zoned R1. Any significant development on this site, other than municipal, parking or commercial, would require a change in zone based on the present Bylaw. Zoning for elevator apartments along Mystic and Pleasant Streets, opposite the Old Burying Ground, is included; a town house district, R4, extends from Maple to Gray Street, interspersed with two other apartment districts. The Zoning Bylaw was written in conjunction with Red Line planning, and includes a T, Transportation, district extending from Alewife to the Lexington line along the MBTA Commuter Rail right-of-way. ●

Impacts

Land Use

The proposed project section from Alewife to Arlington Center should not, in and of itself, significantly affect existing land uses, as the controlling factors are the local zoning envelope and the availability of developable land. The East Arlington area is presently zoned for two-family homes and is almost entirely developed, except for the Planned Unit Development (PUD) zone on Route 2 between Dorothy Road and Thorndike Playground.

This PUD zone, known in the community as the Mugar property, has a high development potential. Current PUD zoning allows an FAR of 4.0. Development of this site is contingent on obtaining access from Route 2 and will not be influenced by the configuration of the alignment in East Arlington. Up to this time the lack of access to the highway has prevented intense development. The two-family zoning will continue with the new Bylaw, and while single units do exist in the area, the possibility remains that they might be sold and the land redeveloped as two-family homes. An example is the Lyons Farm north of the right-of-way on the west side of Pond Lane. This property has recently been on the market and the site is sufficiently large to allow the construction of a maximum of three two-family units.

The alignment alternatives investigated, including the "No-Build Alternative", would not create any conditions which might further affect adjacent land uses in East Arlington. The constraints outlined, and not transit development, are the governing factors along this portion of the Red Line Extension. Transit construction will introduce additional open space use along the right-of-way.

In Arlington Center, the Red Line Station is expected to be a catalyst to development, to encourage a concentration of commercial and office uses in three of the four quadrants. Large land holdings by private owners in the two eastern quadrants, and by the Town of Arlington in the northwest quadrant will facilitate such development, the full extent of which will be controlled by the zoning envelope. Site plan reviews by the Arlington Redevelopment Board will be an important means to control induced development. Plan reviews should give strong emphasis to esthetic considerations and open space needs.

Plans, Policies and Zoning

In Arlington Center, the proposed station was largely in accord with local planning. The Town's expressed desire for a subterranean pedestrian connection between the three commercial quadrants of Arlington Center has been included in the station plan.

Proposed Arlington Center Station development does not include extensive joint development as a part of initial construction activities. In accord with local plans and policies, joint development of the area will be considered during the design phase. Implementation of joint development concepts may necessitate modification of the zoning Bylaw. It is estimated that the Town will exercise care in modifying and strengthening the zoning Bylaw to achieve its goal of revitalizing Arlington Center, without entailing an undesirable transformation of the character of the community.

The project, with alignment and profile as shown on Figures II-1B and C, would create a significant positive impact in terms of implementing Town policies and plans for the area between Alewife and Arlington Center. Designed as a cut-and-cover section, the project would comply with the Board of Selectmen's stated policy favoring an underground alignment and elimination of the Boston and Maine freight lines. This tunnel section could support the linear park proposed in the Arlington Center - Mill Brook Valley Plan.

A linear park connection could be effectively maintained within the limits of the right-of-way. Pathways, additional landscaping, and the installation of park furniture would be the responsibility of the Town.

A depressed section without decking or an at-grade alternative would both be in conflict with the Arlington Board of Selectmen's policy concerning the necessity for an underground alignment. These alternatives are also in conflict with the Town's linear park concept which would utilize the entire right-of-way, as outlined in the Arlington Center - Mill Brook Valley Plan. The cut-and-cover alternative, with maintenance of freight service above, would also be in conflict with local plans and policies which favor termination of freight service. The no-build alternative or construction of a Red Line extension which does not go beyond Alewife, would have a significant negative impact on Town plans and policies which favor the Red Line Extension as a means of revitalizing Arlington commercially and of creating a linear park through the Town.

Property Takings

Proposed property takings will not cause any business or residential displacements.

Along the line segment from Alewife to Arlington Center, two easements would be necessary between Lake and Linwood Streets. With the mitigating measure provided by a tunnel, disturbance of the embankment would have a significant positive esthetic impact on the apartments. Both the dumpster area at the Hamilton Apartments and the landscaped embankment should be reconstructed once construction work is completed in the area. The property owned by the Town was formerly the site of a railroad station which has since been demolished.

The proposed project, and all alternative profiles would require similar property takings. With an at-grade alternative the reconstructed landscaped embankment would not be as extensive as it is at present; the apartment complex would experience a permanent negative esthetic impact. Maintenance of freight service directly above the cut-and-cover transit tunnel would not require takings beyond those already discussed. The no-build alternative would require no property takings.

Commercial Activities

The creation of a potential for an estimated 175,000 additional square feet of retail development would be generated by bringing the MBTA to Arlington, over and above the 75,000 square feet which could potentially be developed during the pre-MBTA period. These figures, from the Gladstone Associates Development Program for the Mill Brook Valley, October 1974, are contingent on creating conditions which are conducive to buyers. The proposed MBTA station would give Arlington Center regional accessibility by rail, as well as by bus feeder routes which focus on the station. The pedestrian underpass system of the proposed station, and the concentration of commercial and office development in Arlington Center encouraged by the recently enacted Zoning Bylaw are both factors which would contribute to easier comparison shopping. All of these factors would encourage post Red Line commercial development.

Commercial activities in Arlington Center would experience temporary disruption during the construction of the subway station below Massachusetts Avenue, and the pedestrian underpass below Mystic Street. Temporary roadway decking would be installed over the construction to allow uninterrupted flow of vehicular and pedestrian traffic above.

The no-build alternative or the alternative of an extension which does not reach Arlington Center would have a detrimental effect on the future of commercial business in Arlington Center.

Urban Design

The proposed project from the Alewife area to Arlington Center would have a positive visual impact on the surrounding area. The tunnel structure would be covered by a layer of soil and grass. Additional improvements such as benches, bicycle paths, small shrubs and lighting, could be provided by the Town to make the area more attractive. This landscaped area would replace the existing, poorly maintained roadbed which is presently abutted by residential properties, parks and playgrounds. Linear park development would be much more compatible with these existing land uses.

The proposed transit station complex must create a positive impact on the visual configuration of Arlington Center. Special attention must be given during station redesign to the relationships with the adjacent housing for the elderly, Arlington Catholic High School and St. Agnes Church in order to avoid adverse noise, visual and air quality impacts.

Special attention should also be given to the design of the entrance at Uncle Sam Memorial Park. The entrance should be clearly marked; however, the entrance structure should have a low visual intensity. The entrance should also be framed by the park landscaping so as not to be highly visible from Mystic Street. Signing of the entrance should be highly visible from Massachusetts Avenue and should include some legend that the entrance also serves as a street underpass.

The line segment alternatives analyzed, excluding the tunnel/cut-and-cover alternative with freight maintenance, would create a negative impact on the adjacent areas. Without the addition of extensive noise and visual buffers, the at-grade option would be incompatible with adjacent residential and park development. The necessary safety fences, noise barriers and landscaped buffers would create a bifurcation of the East Arlington neighborhood both visually and functionally.

Maintenance of the at-grade MBTA freight service above a tunnel/cut-and-cover transit line would not significantly diverge from existing conditions unless extensive landscape work were undertaken. Homes would still suffer a negative impact from the incompatible freight line adjacent to their rear lot lines.

The no-build alternative would have no significant impact on existing conditions.

Joint Development

The potential for joint development of a linear park over the transit right-of-way exists with the proposed project. In concept, the park would connect Thorndike Playground, the Magnolia Street Playground, and the wetland areas near Dewey and Almy Circle. It would remove the barrier between residential areas abutting the tracks on opposite sides and create a pleasant pedestrian and/or bicycle link between Arlington Center and the Alewife area.

The potential for a park-like hiker-biker path would also exist with other alternatives--at grade or tunnel/cut-and-cover with rail freight above. The park development, however, might consist of only a pathway with some minimum landscaping on a much narrower strip. Pedestrian or bike crossings of the right-of-way would be limited to bridges over an at-grade transit line and paved pathways over the freight lines.

The MBTA would grant a surface easement to the Town for development of the park within the boundaries of the former B & M railroad right-of-way. Linear park development over an underground transit line could be achieved by using transit funding for earth cover and grass. A plan for the linear park should be prepared on the basis that implementation would require the use of

Town funds in addition to State and Federal recreation capital improvements dollars. Approval of Town funds would have to be given at the Town Meeting which is scheduled for March of each year. The Town's Linear Park Plan should be prepared in a manner which takes into consideration the connection to the Alewife Station area. The above would also apply to Joint Development of a linear park in conjunction with other alignment alternatives.

The potential for joint development also exists in Arlington Center in conjunction with the design and construction of the MBTA station complex.

Over the long term, a joint development project on the southeast quadrant could provide MBTA with parking for up to 200 autos. Land uses which may be intermixed in the southeast quadrant, the Mirak site, are: commercial, office, residential (oriented towards Spy Pond Field), local parking, MBTA parking, and a possible future entrance to Arlington Center Station.

Plans for development of this site have been prepared by architects hired by the principal property owner, John Mirak, and by a team of students from the Harvard Graduate School of Design. Redevelopment of the site is considered to be important to the revitalization of Arlington Center. Without the Red Line Extension, chances of the redevelopment occurring at all would be severely limited. Redevelopment without MBTA involvement in a joint development project, which would facilitate land acquisition and financing, may also be more difficult.

The Arlington Chamber of Commerce has voiced concern that joint development in Arlington be undertaken via the use of thoughtful, sensitive, careful and systematic planning in order to protect the existing business community while encouraging and enhancing business growth. Federal funds will be available to the Town through the MBTA for Joint Planning studies at Arlington Center under the general guidance of the Metropolitan Area Planning Council along with continued MBTA station design work.

Mitigating Measures

Representatives of St. Agnes Parish found that some of the impacts of the Arlington Center station on their abutting facilities were unacceptably negative. To mitigate these negative impacts a redesign of the station complex will be undertaken during the pre-grant engineering

phase which will address parking, bus movement, traffic circulation and urban design issues in consultation with St. Agnes Parish representatives. The objective is to construct and operate a transit facility fully compatible with the St. Agnes religious-educational-recreational complex which is so important to the life of the community. This will require both careful design and control measures during construction to avoid noise, vibration and safety hazards to the users of the St. Agnes facilities as well as the residents of the Winslow Tower housing for the elderly.

Impacts on open space will be minimized by placing the transit station entrance in Uncle Sam Memorial Park adjacent to the east way of Coolidge Bank and by possibly relocating the Whittemore Monument into a new open space created for the purpose as part of the design of the station complex.

Along the remainder of the alignment in East Arlington, an easement at the Hamilton Apartments should permit reconstruction of existing landscaping after the transit construction is completed. This might involve a permanent relocation of the dumpster area to the south of the fire lane at Linwood Street (the fire lane would be temporarily relocated slightly to the south to maintain access during the construction period.) The landscaped buffer, which has been recently installed by the apartment owners, should be more densely replanted. The buffer would then serve to isolate the apartments from the noise and activities of potential linear park users.

Final design and detailed location of ventilation shafts should consider the noise impacts that might be created as well as the impacts of the structures on the continuity of the linear open space. To reduce noise impacts, openings should be located as far as possible from sensitive receptors. A vent shaft should not be located in the right-of-way at the site of the old railroad station just west of Lake Street. This section is wide enough for the Town to develop a useful neighborhood play area in conjunction with its remaining holdings.

The at-grade and the tunnel/cut-and-cover with freight maintenance alternatives would require significant measures to mitigate against their lack of compatibility with adjacent land uses. Extensive visual, noise and safety barriers would be necessary along with extensive treatment of the track to minimize noise and vibration.

NEIGHBORHOOD AND COMMUNITY FACTORS

Existing Conditions

The one factor of community concern predominant along this segment of the Red Line is neighborhood cohesion. East Arlington is the most densely populated neighborhood in the Town. Members of the East Arlington Neighborhood Association live on either side of the MBTA Commuter Rail right-of-way as well as on both sides of Lake Street. The neighborhood's goal is to tie this area together by means of the opportunity presented by the linear park connection. A discussion of the character of the East Arlington area is found in Chapter VI, since much of it lies within one-half mile of the Alewife Station site.

The Arlington Center area is characterized by older predominantly brick retail structures and by several public and religious structures. The majority of retail buildings, which are two stories in height, were built during the latter part of the 19th and the early 20th century. Arlington Center was formerly dominated by the spire of the historic First Parish Unitarian Church, which was destroyed by fire in 1975. This structure, along with the Robbins Library, the Whittemore Robbins House, the Jason Russell House and the Town Hall, created the visual character of the Town. Loss of the Church by fire diminished the historic and esthetic qualities of the Center. Plans are underway, however, to replace the Church on the same site. A more substantial Church complex is the series of facilities of St. Agnes Parish centered around Medford Street. These include the St. Agnes Church and Rectory, the Arlington Catholic High School, St. Agnes School and Fidelity House. Another contribution to the character of Arlington Center is the park between the Town Hall and the Robbins Library, which was redesigned by the Olmstead Brothers, America's first great landscape design firm. This park and the buildings which surround it are listed in the National Register of Historic Places.

Population

The population of the area within one-quarter mile of the proposed Arlington Center Station was nearly 1,700 in 1970, and nearly 3,800 additional persons lived between one-quarter and one-half mile from the station site. Thus, a total of about 5,500 persons presently live within a one-half mile walking distance of any proposed transit entrance. Just over 23 percent living within one-half mile of the Massachusetts-Mystic-Pleasant intersection were found to be over 65 years of age, a high figure when measured against the national average or the 14 percent

average for the Town of Arlington. Of the 5,500, six people or less than one percent are minority. About one-quarter of the population were under eighteen years of age. Average family size was three persons in owner-occupied units and two persons for rental housing units.

Only 34 percent of the housing units within one-half mile of Arlington Center are owner occupied. Within one-quarter mile of the station site, the average value of housing units was \$25,100 for the East Arlington area; approximately \$29,000 to the south and northwest of Arlington Center; and \$23,000 to the northeast. The average value of owner-occupied units was \$28,000 within one-half mile of Arlington Center.

Over 500 of the approximately 2,000 housing units within the one-half mile radius were located in structures containing ten or more units. Two large public housing projects for the elderly are located in this area, Winslow Tower with 136 units and Chestnut Manor with 100 units.¹ In 1970, average rental within one-quarter mile of the Center was \$118 per month; from one-quarter to one-half mile from the Center it was \$153 per month with newer units reflecting higher rentals. The vacancy rate for all housing was below one percent and with the high number of elderly, many on fixed incomes, the number of available low rent units becomes important. Arlington is looking toward some form of subsidy-oriented housing program rather than a construction-oriented program to solve the needs of its low- and fixed-income population.

The areas west of the Mystic Lakes and around Spy Pond (census tracts 3564 and 3567) have a stable population with less turnover than is experienced in other neighborhoods according to the 1970 U. S. Census. The total number of households that have not relocated since 1964 or earlier was found to be more than 60 percent, which is slightly higher than the percentage for the entire town. The most stable area is west of the Mystic Lakes and north of Summer Street (Tract 3564) where 85 percent of the units are owner occupied. The East Arlington area (Tracts 3562 and 3563) experience a higher rate of population turnover. In 1970, only 28 percent of the households had moved into the neighborhood before 1960. These figures reflect the fact that

¹ Housing Survey, Arlington, Massachusetts. August, 1973.
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these two census tracts have a high proportion of rental units relative to the same figure townwise. In Arlington, 41 percent of the housing units were renter occupied in 1970 but in Tracts 3562 and 3563, 62 percent and 59 percent respectively of the units were renter occupied.

According to the 1970 census, only 4.1 percent of the families in Arlington had incomes below the poverty level. Near the Arlington Center Station the greater number of poverty level families were found southeast of the proposed station area in Tract 3562 between Broadway and the MBTA Commuter right-of-way. There, the proportion of poverty level family incomes was 6.6 percent. Lowest numbers of poverty level households were found in the area north of Summer Street and west of the Mystic Lakes, only 2.8 percent of all families.

The questions on mode of travel to work and location of work which appeared on the 1970 United States Census disclosed that about one-quarter of the workers living in the vicinity of Arlington Center traveled to and worked in the City of Boston. About one-quarter of this group worked in the Boston central business district. Approximately one-fifth of all workers responding in Arlington Center indicated work trip destinations in Cambridge. Thus Boston and Cambridge destinations constituted a substantial portion of all work trips. Projection of the actual numbers of such workers is a problem due to the design of the census questionnaire, the method by which results are tabulated, and the fact that only a proportion of the working population is known to have responded. It should be noted that in East Arlington a somewhat higher proportion of workers was found to be employed in Cambridge and Boston as compared to the Arlington Center area. In the latter area approximately one-third of the workers were employed at nearby locations, while the proportion of those who worked in Cambridge and Boston corresponded to the Townwide average.

All but six percent of the households in Tract 3564, the area west of the Mystic Lakes and north of Summer Street, owned at least one automobile. Forty-one percent owned two or more, a very high rate of multiple car ownership since only 26 percent of all households in Arlington had two or more cars. In Tract 3567, nearly 85 percent of the households had at least one car

and 27 percent owned two or more. Multiple automobile ownership was much lower in the two East Arlington tracts and the proportion of households without cars was much higher; 17 percent in Tract 3563 and more than 22 percent in Tract 3562. The latter is significant since Massachusetts Avenue bisects this census tract and most residences within it are within easy walking distance of the MBTA bus route. Nearly one-quarter of the workers living in this tract in 1970 rode a bus to work. In Tracts 3563 and 3567 about 60 percent of the workers drove to work in 1970 and just over 15 percent took a bus. Highest use of the automobile as a mode of access to work was found in Tract 3564 where more than 70 percent drove to work and just over ten percent took public transportation.

Pedestrian Circulation

Comprised almost uniformly of wood frame two-family homes, the East Arlington area appears to have a great deal of cohesiveness despite its being divided by the MBTA Commuter Rail right-of-way. This is due to a number of factors:

- . Most elementary school children in East Arlington who live to the south of Massachusetts Avenue attend the Hardy School. Children living to the south of the right-of-way and east of Spy Pond have to cross the right-of-way to reach this school located on Lake Street.
- . Thorndike Playground, Scannel Field, Pond Lane Totlot, Spy Pond Field and the Boys Club are major centers for neighborhood residents. Crossing or walking along the railroad right-of-way has become a principal means of travel to and from these activity centers.
- . East Arlington's branch library and a movie theater on Massachusetts Avenue at Lake Street help define it as a neighborhood apart from the remainder of Arlington.

Throughout East Arlington where backyards abut the tracks, paths through grasses along the railroad have been beaten down from pedestrians crossing the tracks. Major crossing points, located through field reconnaissance, were found at the end of Varnum Street, crossing over to Thorndike Street; at Orvis Circle; Elmhurst Street and at Marion Circle. The existing railroad right-of-way is constantly used by pedestrian traffic and serves as a direct link to Arlington High School, Arlington Center, Arlington Boys Club, Spy Pond Field, and to the Arlington High School athletic field just west of Arlington Center.

Arlington Center business suffers from poor pedestrian access for three major reasons: (1) Commercial land uses are located in a strip along Massachusetts Avenue maximizing walking distances for comparison or multipurpose shopping. (2) A high volume of vehicular traffic exists on Massachusetts Avenue, Mystic and Pleasant Streets making pedestrian crossings difficult and hazardous. (3) Massachusetts Avenue is about 100 feet wide. A lack of convenient parking and poor pedestrian circulation have been largely responsible for the decline of the Center when compared to shopping malls located outside of the Town.

Parking

A survey to assess the supply and demand of daytime non-residential parking was conducted in Arlington Center in December 1974 and 1975 and included in the Arlington Center - Mill Brook Valley Plan. The survey divided the Center into sectors which approximated maximum walking distances and subareas created by barriers to pedestrians. Demand was estimated using standards relative to square footage of floor area by land use in a given sector.

A demand for 1,142 spaces was determined, and a total of 1,058 spaces were found to exist; the deficit for Arlington Center amounted to 84 spaces. Three sectors were found to have parking supply surpluses, the greatest being at Russell Common. The lot was found never to be full, even during the Christmas shopping peak. Most serious parking supply deficits were found to occur east of Arlington Center in the southeast quadrant and along the north side of Broadway. The plan stressed that existing businesses in Arlington Center create a parking demand which is largely short term: one-half to one hour; therefore, parking in on-street metered spaces turns over rapidly.

Included in the survey were the 231 metered spaces in the Russell Common Municipal Parking Lot at Mystic and Chestnut Streets and the Mystic Street right-of-way. The area contains 147 ten-hour parking spaces, 44 two-hour spaces and 40 one-hour spaces. The ten-hour spaces are regularly occupied by MBTA bus and rail commuters or by Arlington Center employees. Physical conditions discourage use of the lot by short-term parkers, since the walking distance to stores on Massachusetts Avenue is lengthy and uphill. Consequently, the short-term spaces remain largely unused by shoppers.

Public Safety

Emergency vehicles from Arlington Police Department Headquarters on Central Street and from the Firehouse at Monument Park are often hampered by traffic congestion while attempting to respond to calls. The problem is also aggravated by the railroad grade crossing; however, the Director of Community Safety indicated that at-grade trains did not now pose a significant impact to police, fire or emergency vehicles since alternate access routes were available. The Director did note that the fire company's ladder truck could not use Pond Lane access to the Boys Club, south of the right-of-way, because the bridge clearance was not adequate. The ladder truck would have to take a far less direct route to gain access to the structure, increasing response time significantly.

Community concern exists regarding personal safety and property damage due to a recent rash of vandalism and purse snatchings, documented in the local newspaper through the spring and summer of 1975. This kind of activity apparently was not common to Arlington even in the recent past. A number of citizens expressed their concern that bringing the MBTA to Arlington would also bring a higher crime rate and require higher local expenditures for police services.

Impacts

Housing / Mobility

Development of a cut-and-cover transit line segment between the Alewife area and Arlington Center, with possible joint development of a linear park over the transit line, would create conditions which should increase the desirability of housing units; therefore, rents and real estate values in the vicinity of the linear park should

increase. Rents and real estate values in the vicinity of Arlington Center Station are also expected to increase as a result of the increased regional accessibility of Arlington Center.

Without the Red Line Extension, the Gladstone Associates Study estimated the housing development potential of Arlington at 1,000 dwelling units. With the Red Line Extension, the housing development potential through 1990 was estimated to be 1,500 dwelling units. Many of these units, privately financed, will be beyond the rental range of moderate income households. Some units, financed with government assistance, could meet the needs of moderate income families for whom housing is now in critical short supply.

Property Values and Taxes

Aside from the expected general increase in property values due to an improved transportation system, certain localized effects would occur in the immediate vicinity of the transit right-of-way and nearby stations.

When the freight line is removed and a linear park strip is developed, property values of homes in the East Arlington Area should increase more than would be expected without Red Line development. Even if the Town does not undertake to extensively improve the grassed over decking above the transit line, the mere elimination of the freight line, with its noise and vibration, as well as its under-maintained roadbed, would make the abutting homes a more desirable purchase.

Business zoned parcels in close proximity to Arlington Center Station would experience greatly increased property values. Some residential parcels in the immediate area, particularly on Swan Place, Mystic and Chestnut Streets could have increased property values, resulting from their being within walking distance to transit, offset by a decrease value resulting from higher traffic volumes on adjacent streets. Closing of Swan Place at Massachusetts Avenue would mitigate against such an offset in that area, by reducing traffic.

Alternatives such as a depressed transit line without decking or an at-grade transit line could possibly lower property values in the immediate vicinity of the tracks unless major steps are taken to minimize noise, vibration, safety and visual impacts.

Measures which would tend to offset these negative impacts would be the construction of safety and noise barriers, special roadbeds and extensive landscaping. The alternative of freight tracks over tunnel/cut-and-cover transit would leave conditions relatively unchanged. Improved property values could accrue if a portion of the right-of-way not used for freight operations were landscaped.

An estimated \$815.27 (1975 dollars) in tax revenues would be lost because of the right-of-way requirements for this section of the project.

Employment Opportunities

The proposed project should have a positive impact on employment in Arlington Center by encouraging a concentration of commercial and office development in the vicinity of the transit station. The Gladstone Market Study conducted for the Mill Brook Valley Plan indicated that an additional 175,000 square feet of retail and 230,000 square feet of office space would be developable if the Red Line were operational. This additional square footage would create a substantial number of new retail, office and service jobs in Arlington Center. The transit facility itself will provide new jobs to the community: positions such as station attendants, maintenance staff, train engineers and transit police.

Parking

Once the Red Line is open, competition for long-term parking spaces will become a problem for employees in Arlington Center. Use of eight-hour meters could be one solution for the Town to consider. Transit commuters would not be able to park for a long enough period to cover their travel time. It may be necessary for the Town to hire additional personnel to police illegal parking in Arlington Center. A tow-away service contract could be negotiated by the Town. Parking restrictions should be prominently posted and strictly enforced.

Public Safety

The proposed project would create a positive impact on public safety for residents in East Arlington. The unfenced at-grade MBTA freight line would be removed and the Red Line would be underground, inaccessible to children. As a mitigating measure, shrubs or thorn bearing bushes might be planted around the vent shafts to discourage access by children. The ventilation shafts would provide a means of egress should an emergency situation arise within the tunnel.

Railroad grade crossings at Lake Street, Linwood Street, Swan Place, Massachusetts Avenue and Mystic Street would be eliminated. As a consequence, traffic delays, backups and hazardous conditions due to train crossings now experienced in the Arlington Center would also be eliminated. The Pond Lane underpass, now only one lane in width with abutments blocking sight lines, would be eliminated and the embankment removed. The transit line would run under the street and the view around the bend in the road would be unobscured.

It is not expected that the Red Line will be a factor in creating an increase in Arlington area crime by facilitating access to the Town by criminal elements from other areas. Such crimes as are cited by Arlington residents, purse snatchings and particularly vandalism, far more often than not have a local origin. These crimes are on the rise in all kinds of communities across the nation, rural as well as urban; they are committed by people of varied socio-economic background, rich as well as poor. The recent perceived increase of vandalism and other crimes in Arlington is a local phenomenon, one which could continue to grow worse in the future, without local response and without the Red Line.

The proposed Massachusetts Avenue and Mystic Street pedestrian underpasses to be constructed as a part of Arlington Center Station, would create a safer network for pedestrian travel in Arlington Center. This network would be of particular use to the high proportion of elderly in Arlington, many of whom find it very difficult to cross these congested streets. Residents of Winslow Tower, a building constructed for the elderly and handicapped, would have safer

access to local shopping. Collector's booths in the station areas are situated to permit maximum surveillance of public areas and entrances to optimize personal safety. Station attendants would have a view of the station platform. MBTA police would patrol the line and attendants would be able to summon MBTA and/or Arlington police, if needed, via direct communications.

As a result of grade improvements at street crossings, in particular Pond Lane, and the elimination of the Arlington Center railroad crossing, access across the transit right-of-way by emergency vehicles would be much improved.

The at-grade alternative would require a transit underpass beneath Lake Street and possibly under Linwood Street in order to eliminate vehicular grade crossings. Both alternatives would present opportunities for projectiles to be thrown over the fencing or to be dropped from bridges. This type of vandalism has been a frequent problem along the South Shore line, as documented by press reports during the summer of 1975. For this alternative, the closing of Linwood Street was considered in order to improve the transit profile; however, closing Linwood Street would result in the closing of the Hamilton Road fire lane. The Arlington Director of Community Safety felt that this street closing would create a significant negative impact by leaving only one emergency access to the Spy Pond apartments and that it would be unacceptable.

The tunnel/cut-and-cover alternative with freight maintenance does not eliminate rail crossings at Lake Street or Linwood Street. Routing the freight underneath Arlington Center alongside the station would improve safety and eliminate delay due to train traffic in the Center. Routing the trains at grade over Pond Lane and through Arlington Center would not significantly change unsafe sight lines and limited vehicle access, although the Pond Lane underpass could be improved by widening the road to two lanes since the existing bridge would have to be replaced.

Pedestrian Circulation/ Neighborhood Cohesion

The proposed project, a Tunnel/Cut-and-Cover transit line in East Arlington would include the possibility of linear park development by the Town and would be a positive contribution to neighborhood cohesion. It would make the right-of-way a focus for pedestrian activity, and would encourage more community residents to use the right-of-way for recreation and as a pedestrian link between park, residential, wildlife, and shopping areas. Without any inducement the unimproved and infrequently used freight right-of-way is presently a major pedestrian path for school children. The park could be developed as a focus to provide a meeting place for residents living south of Massachusetts Avenue in Arlington. The backyards along the right-of-way could be opened up directly onto the park, encouraging communication between the residents immediately abutting but on the opposite sides of the right-of-way. As previously mentioned on page VII-45, numerous pathways run from backyards between Varnum and Lake Streets and all along the MBTA Commuter Rail right-of-way in East Arlington. The underground transit line would respond positively to these existing pedestrian connections.

In Arlington Center the proposed pedestrian underpass system would facilitate comparison shopping and neighborhood communication across the barrier which Massachusetts Avenue now represents.

An at-grade alternative would negatively impact the community. Existing pedestrian activity would be limited to a maximum of only six pedestrian overpasses at Varnum Street, Lake Street, Linwood Street, Pond Lane and Whittemore Street. Maintenance of the freight line above a tunnel cut-and-cover line would leave conditions largely unchanged unless the Town develops a narrow paved pedestrian path or bikeway over the transit line and alongside the freight tracks.

Mitigating Measures

Grading and seeding of the tunnel portion of the proposed alignment and the remainder of the transit right-of-way is recommended as a mitigating measure. The development of a linear park above the transit alignment could be accomplished by the Town of Arlington or an appropriate metropolitan or State agency.

More extensive planting of the embankment adjacent to the Hamilton Apartments is also recommended to buffer the apartments from the view of those using the biker-hiker path in the linear park.

Extensive fencing and landscaping could be used to mitigate negative esthetic impacts of the at-grade transit alternative; however, these measures would in turn create a visual barrier. Pedestrian overpasses could be introduced to provide access to recreation areas, but would not suffice to meet the demands of existing pedestrian activity crossing the right-of-way.

Most Arlington Center Station impacts can be mitigated by measures cited on page VII-39. These measures essentially mitigate against esthetic impacts which might occur without a sensitive design response to the site environment.

PARKS, RECREATION AND HISTORIC RESOURCES

This section presents the detailed information requisite to Section 4(f) review requirements to describe the existing conditions of these public parklands, including size, facilities, usage and ownership, and to thoroughly identify project impacts and methods of mitigation.

The following public parks, recreation areas, and historic structures are located along the transit alignment from Alewife to Arlington Center:

- Thorndike Playground
- Scannel Field
- Pond Lane Park and Totlot
- Spy Pond Field
- Whittemore Historic Park
- Uncle Sam Memorial Park

Existing Parks and Recreational Resources

Thorndike Playground

Thorndike Playground is a 7.8-acre recreational field located in southeastern Arlington. It is bounded by Margaret and Edith Streets to the north, the MBTA Commuter Rail Lexington Branch to the east, and Route 2 to the south. To the west there is an undeveloped land parcel, known as the Mugar property, for which a major mixed use development is planned.

With the exception of a paved basketball court, the playground is grass covered and is used for field sports such as football, soccer, volley ball and other activities requiring open areas. Two baseball diamonds with backstops are used for Little League baseball and softball. Two swing sets and other play facilities are available for young children. Since it is the only large open field in eastern Arlington, it serves the recreational needs of a large district and is intensively used, particularly during the summer. Many supervised programs use the facilities including the Summer Playground Program, the Men's Softball League and the Suburban Girls' Softball League (five nights a week, May through August) and during the fall months, it is used for high school football and soccer. While people of all ages use the playground, young people are the predominant users, especially during the summer when average daily attendance approaches 200 people.

Access to Thorndike Playground is fair via Margaret Street to the north or Thorndike Street to the east. Thorndike Street, however, crosses the MBTA Commuter Rail Lexington Branch railroad at grade. An unpaved access road and parking area parallels the eastern border of the playground and connects Margaret and Thorndike Streets. Although the Lexington Branch acts as a barrier to vehicular access, the right-of-way does provide a linear link for East Arlington residents who walk to the playground.

In view of its intensive use and only fair access, in the 1972 Arlington Open Space Study it was recommended that accessibility be upgraded by marking its location with signs on nearby streets and improving the parking capacity.

Thorndike Playground is the only sizable open space in Southeastern Arlington and serves a large recreational district. The Magnolia Street and Hardy School Playgrounds are nearby, but their small size and limited facilities provide recreational activities mainly for younger children.

The Town of Arlington has developed a plan to provide a link between the various open space and recreational facilities. An important step toward achieving this goal was taken when a Town warrant was passed which authorized the purchase of vacant private land between the Thorndike Playground and the Magnolia Street Playground. This purchase would include the abandoned railroad right-of-way which spurs off the Lexington Branch and the cattail marsh near Dewey and Almy Circle. The implications of this acquisition to the 4(f) review process will be considered further at the end of this chapter.

Starting at Arlington Center, this linear link would follow the path of the Lexington Branch right-of-way and would include Spy Pond and Thorndike Playground. After connecting with the Metropolitan District Commission's land holdings, it would follow Alewife Brook downstream to the Mystic River and upstream to Mill Brook. A more complete treatment of this concept is given in the Land Use section of this chapter.

Thorndike Playground, wedged between heavily trafficked Route 2 and a railroad, is not a desirable location for a recreational facility. A dense row of trees provides a visual barrier to Route 2, but this area is still subject to noise disruptions. In addition, the playground has a low-lying position and is hydrologically connected to Alewife Brook. Consequently, it often functions as part of the Alewife Brook floodplain during heavy storms.

The Thorndike Playground is owned by the Town of Arlington and is under the jurisdiction of the Arlington Parks Commission. During the BTPR Study, a letter, dated November 7, 1972, was received from the Chairman of the Board of Park Commissioners. This letter declared the Thorndike Playground to be of local significance. Similar letters were received regarding Scannel Field, Pond Lane Park and Totlot, and Spy Pond Field.

Scannel Field

Scannel or Linwood Field is a rectangular 1.7-acre park on the northeastern shore of Spy Pond. The northern boundary is formed by Linwood Street, Hamilton Road and the MBTA Commuter Rail Lexington Branch railroad which run parallel to one another. An apartment complex is to the southeast.

Scannel Field is grass covered and is mainly used by young people for baseball and softball. During the summer, it is the major Little League field as it is the only park in Arlington with complete baseball facilities, including dugouts and bleachers. It is the locale for the Arlington Summer Playground Program, and is used for junior high girls' softball on weekends. Junior High East also used the field in the fall for soccer and field hockey. In addition to the various organized activities, it is also used extensively for unsupervised activities.

Fair access is provided via Linwood Street which crosses the Lexington Branch right-of-way at grade and by Hamilton Street. The right-of-way and a path from Pond Lane also provide pedestrian access.

Scannel Field, Pond Lane Park and Totlot, which adjoins Scannel on the northwest, and Spy Pond Field, which is further to the northwest, form the Spy Pond Shore Parks. Except for Spy Pond Field, which is also used for baseball, no activities or facilities are duplicated in these parks.

Spy Pond, a State-controlled Great Pond, has not reached its full water-based recreational potential because it is nearly surrounded by private property. The Spy Pond Shore Parks form a greenbelt around the northern shore and furnish the only public access. Thus, Scannel Field is valuable for its frontage on Spy Pond as well as for its open field facilities.

Like the Thorndike Street Playground, Scannel Field is one of the public parks to be linked in the proposed linear park system, a loop created by the railroad right-of-way, the Metropolitan District Commission's Alewife Parkway, the Mystic Lakes and Mill Brook.

Pond Lane Park and Totlot

The principal activities at this facility are children's unsupervised play and family picnicking. The landscaped park has five picnic tables, four outdoor grills, numerous benches, and a variety of playground equipment such as a merry-go-round, slides, and swings. In 1976, construction of a boat ramp, boat dock, parking for cars and trailers, realignment of Pond Lane, traffic control devices at the railroad underpass and new picnic tables and landscaping is to be funded by the Public Access Board.

While the Pond Lane Park receives intensive neighborhood patronage from the East Arlington residents, it is also important to the entire Town of Arlington because of its frontage on Spy Pond. Here families can enjoy the pleasing visual aspects of Spy Pond while picnicking or relaxing. Activities of the Summer Playground Program for East Arlington are centered on this park and usage is, therefore, heaviest during summer. Heavy use of the park is expected once the new facilities are constructed.

Present access to the Pond Lane Park and Totlot is poor. Although a small paved parking area is available to the west by Pond Lane, the vehicular approach is dangerous and most access is by foot. Primary access is provided by a path which extends from Pond Lane under the Lexington Branch right-of-way. Pedestrian access is also possible from both Spy Pond Field and Scannel Field.

No other park in the East Arlington area has comparable facilities to the Pond Lane Park and Totlot. As one of the Spy Pond Shore parks, it provides limited access to the Spy Pond, which increases its importance.

The Pond Lane Park and Totlot would be one of the parks in the greenbelt system to link recreational facilities. This proposed plan is detailed in the Arlington Open Space Study.

Spy Pond Field

Spy Pond Field is an 8.8-acre recreational area located on the northern shore of Spy Pond. It is bordered by Wellington Street, Lombard Terrace and the MBTA Commuter Rail Lexington Branch Railroad.

The recreational activities at Spy Pond Field are predominantly supervised sports and include baseball, football, field hockey, tennis, and track. The facilities include three baseball diamonds with backstops, three double tennis courts (clay), one single tennis court, a one-eighth-mile running track, a shower room and maintenance building, and bleachers.

Plans for upgrading the park include replacing the existing tennis courts with four new all-weather courts in 1976, parking on Wellington Street, regrading, loaming and seeding Spy Pond Field, landscaping, seating, and additions and improvements to the existing playground. Partial reimbursement funds will be sought for this work from the Bureau of Outdoor Recreation.

Spy Pond Field is intensively used throughout most of the year, particularly by young people. The Arlington Boys Club, located across Wellington Street, the Little League baseball program, the Arlington High School football and girls' field hockey programs, and the men's softball league all use the facilities during the appropriate seasons. Tennis tournaments, sponsored by the Arlington Tennis Club, are also held at Spy Pond Field.

Access to Spy Pond Field is good. Automobile access can either be from Pleasant Street to Lombard Terrace or Wellington Street by way of Whittemore Street to Pond Terrace and pedestrian access is available also via the Lexington Branch right-of-way.

Of the facilities available at Spy Pond Field, only the baseball diamonds are duplicated at nearby Scannel Field; however, the baseball facilities are generally used by different age groups. Spy Pond Field, like the other parks abutting the Lexington Branch right-of-way, would be included in the plan to link open space in Arlington with a linear greenbelt loop.

An unusual deed restriction states that the land in Spy Pond Field must be used for "School Children of Arlington".

Whittemore Historic Park

Whittemore Historic Park is a small, 0.2-acre park located at the intersection of Mystic Street and Massachusetts Avenue in

Arlington Center. It is bisected by the MBTA Commuter Rail Lexington Branch railroad tracks. Established in 1967 as a Revolutionary War memorial, it also functions as a rest area for shoppers.

The principal feature of the park is a memorial stone commemorating Samuel Whittemore, a Revolutionary War hero, and the Battle of Menotomy. Although most of the surrounding area is paved, it has been landscaped with shade trees, ornamental shrubs and grass. As park benches have also been provided, this small area furnishes a rest spot, removed from the street traffic, which is frequently used by shoppers, senior citizens, and young people. Access is by foot as it is located directly off the sidewalk along the north side of Massachusetts Avenue.

The park is owned by the Town of Arlington and is under the jurisdiction of the Board of Selectmen. In connection with the BTPR Study, Letters of significance, dated February 2, 1973, were received from the Secretary of the Board of Selectmen relative to Whittemore Historic Park and the Uncle Sam Memorial Park.

A similar, but larger and more formally landscaped area is available to the west in the Town Garden, located between Robbins Library and the Town Hall. Town Garden and Whittemore Historic Park, in conjunction with landscaping of the Uncle Sam Memorial Park were developed to improve the surroundings in the central area of Town.

Uncle Sam Memorial Park

The Uncle Sam Memorial Park is a 0.2 acre historic site located across the street from Whittemore Park on the northwest corner of the Mystic Street-Massachusetts Avenue intersection in Arlington Center.

The grass-covered site is the approximate birthplace of Samuel Wilson, the progenitor of Uncle Sam. A large statue will be erected in the park and dedicated in 1976. In addition to its historic significance, the park is used by shoppers and senior citizens as a quiet rest area.

Impacts

Several parks in Arlington Center will be affected by the proposed project and its alternates. At the Uncle Sam Memorial Park a small area adjacent to the Massachusetts Avenue sidewalk would be required, since the sidewalk is too narrow for placement of the entrance. It is recommended that this entrance be located as close to the Coolidge Bank building wall as possible. Replacement open space would be provided to the Town via an easement above the transit right-of-way abutting the north edge of the park. The area of the easement will more than compensate for the loss due to the construction of the station entrance.

Whittemore Historic Park would have to be relocated, at least during the period of cut-and-cover station construction. Depending on the final design of the station and plaza complex, the park could be reconstructed at its present location or relocated to the north on new open space.

The proposed tunneled transit line would have an overall positive impact on publicly owned park land by enabling development of a linear park to link all the major open space areas of the Town. Development of the transit right-of-way as a park would provide a net increase of open space to the Town, useful as a pedestrian spine serving the entire community.

An open cut or at-grade alternate would not provide the benefits of access across the right-of-way to existing parks. It may be possible to construct a narrow hiker/biker path parallel to a depressed/open cut alternate, but this alternate would be far less desirable than the underground project.

Existing Historic Resources

Fifteen sites of historic significance have been identified within this section of the Project Corridor. Under a ranking system used by the Arlington Historic Commission, each structure has been classified in one of four categories connoting its national and local historic value.

The four categories, which have been fully defined in preceding chapters, are Primary Importance, Important, Moderately Important, and Mentionable. The following list cites historic resources in the Arlington Center environs.

1. 21 - 23 Pond Lane. The 175-year old Lyons Farm includes a modest, early 19th Century farmhouse with late Federal and Greek Revival characteristics. It has been classified Moderately Important.
2. Railroad Avenue. This Victorian Railroad depot was constructed in 1883 to replace the original Arlington Center railroad station. Although classified as an Important historic resource, its original ornamentation has been replaced with modern siding. It has not been used since the early 1960's.
3. 659-65 Massachusetts Avenue. This 1901 buff brick commercial building trimmed with grey Ohio sandstone was Arlington Center's first four-story building and has been classified Moderately Important.
4. 667-71 Massachusetts Avenue. This buff brick commercial building with some trim was the work of Prescott and Sidebottom, and was completed in 1905. The building operated as a general store and informal civic center for many years and has been classified Moderately Important.
5. Arlington Town Center Historic District. Although the District is peripheral to the project corridor (it is bounded by Massachusetts Avenue and Academy, Maple and Pleasant Streets, excluding the southeastern corner of the block), it contains a number of notable structures and sites important to Arlington's historical development. These include: Whittemore-Robbins House, Federal Style (c. 1795) Mansion in

excellent condition now occupied by town offices; Robbins Library Italian Renaissance Style built in 1892 with addition added 1930; Arlington Town Hall, built in 1912 and designed to complement the neighboring library; Robbins Memorial Town Garden, established between the Town Hall and the Library, featuring meandering sidewalks and pool designed by Olmsted Associates; and the Old Burying Grounds, a Revolutionary War Cemetery. The First Parish Unitarian Church, a Victorian Style church built in 1856 on the corner of Massachusetts Avenue and Pleasant Street, was also an integral part of the District but was, unfortunately, destroyed by fire in early 1975. As it is listed on the National Register of Historic Places, the District is classified as Primary Importance.

6. Four Water Street - The Ephraim Cutter House. This Federal mansion (c. 1804) with a hip roof includes pedimented and dentil-decorated doorways and is reminiscent of the Georgian style. Although it has been moved from its original site and converted to commercial use, it remains in good repair with many original interior details. It has been classified of Primary Importance.
7. Five Water Street. The MBTA Power Station was designed in 1911 in a simple Renaissance Revival style by Stone and Webster of Boston. Its style is consistent with that of the Robbins Library, nearly opposite across Massachusetts Avenue. It has been classified of Primary Importance.
8. 11 Water Street. This Victorian home, constructed around 1895, has been classified Moderately Important.
9. Six Russell Terrace. This Victorian dwelling was built for Louisa V. Russell in approximately 1890; the piazza and bay window were added in 1916. It has been classified as Important.

10. 23 Water Street. This handsome and well-proportioned dwelling is a good example of Greek Revival architecture, and has been classified Moderately Important.
11. 18 Water Street. This Federal dwelling is set within a wall of cut granite and wrought iron fence. It has been classified Moderately Important.
12. 7-9 Court Street Place. This thick-walled, brick building, constructed in 1907 as a commercial warehouse, has been converted into apartments. The building's historic value is ranked as Mentionable.
13. 28-32 Central Street. The rear elevation of this Victorian structure stands high on a brick foundation over Mill Brook and the railroad bridge. Constructed originally as a barn around 1880, it was converted to a two-family house in the 1890's. It is classified Important.
14. Granite Arch, Mill Brook. This arch, part of a railway bridge constructed of cut-granite in 1845, adds a strong visual focus to a small open portion of Mill Brook. As part of the esthetic setting, it has been classified of Primary Importance.
15. 29 Mill Street. Constructed around 1880, this Victorian dwelling has been classified of Interest.

Impacts

Environmental impacts to these historic structures which would result from construction of the proposed project are minimal. Those properties such as 21-23 Pond Lane, 6 Russell Terrace, 18 and 23 Water Street, and 28-32 Central Street could experience some perceivable vibration without special treatment of the transit trackbed. Presently these structures experience extreme noise and vibration impacts resulting from the intermittent passings of freight and commuter trains on the poorly maintained railroad roadbed. This condition, which can cause significant damage to the mortar and plaster in older buildings, would be eliminated.

The Granite Arch culvert opening at the Mill Brook crossing would be kept in place. The transit would be routed over the reinforced culvert, within the existing embankment. A permanent easement would be required below the lot at 6 Russell Terrace; however, the corner of the surface need not be acquired.

During the construction of the Red Line Extension through Arlington, all precautions will be taken to avoid negative impacts to historic properties and structures. Through consultation with the Massachusetts State Historical Officer and the Arlington Historic Commission, all potentially affected historical properties and structures were identified. Steps to mitigate possible negative impacts to these historic resources were outlined and documented in the "Section 106" report and in letters of correspondence between the MBTA, the State Historical Officer and the Arlington Historical Commission. Basically, these letters and report state that if any historical properties or structures must be moved or disturbed, they will be restored to their original condition; if a property is damaged, compensation will be made; and all Federal and State regulations will be followed.

ECOLOGY AND HYDROLOGY

Existing Conditions

This area, like the rest of the study corridor, is in the midst of a heavily urbanized region. The East Arlington area, while having some commercial and industrial development and a few major thoroughfares which are primarily outside the immediate study area, is characterized by single- and multiple-family dwellings. Within this setting, small areas of open space offer marginal habitat for certain wildlife species. Along the study corridor, the major natural environmental resources are the MBTA Commuter Lexington Branch right-of-way coupled with the adjacent backyards of the residences and Spy Pond.

Lexington Branch Right-of-Way

The quality and quantity of the vegetational elements along the Lexington Branch right-of-way are varied. In general, the natural areas are found from Thorndike Street to Lombard Terrace. Although not as environmentally sensitive as other open spaces in the study corridor (the Alewife wetlands for example) these areas do provide marginal habitats and visually pleasing settings.

No ecologically sensitive areas occur from Lombard Terrace to the Arlington Center station. Most of the right-of-way is barren or covered with a mixture of grasses and other herbaceous plants. The narrow edges, abutting the residential properties, are composed of numerous woody shrubs, sapling trees, and occasionally by mature trees. Included in the plant species are oak, willow, birch, alder, dogwood and maple. These trees and shrubs are not distributed uniformly along the right-of-way, but are scattered and clumped. Some areas have short narrow strips of dense scrubby growth while other places may have only one large or a few sapling trees. Most of the backyards in this residential area contain at least one large shade tree, usually oak, maple, or willow, and also have other ornamental shrubs and plantings.

These vegetational elements provide a marginal wildlife habitat. A few small mammals, such as cottontail rabbits, are occasionally found, but the area's wildlife primarily consists of song birds. Starlings and house sparrows, typical of urban environments, are abundant but many other esthetically pleasing species are also present. These include: cardinals, black-capped chickadees, white-breasted nuthatches, blue jays, kingbirds, catbirds, tree sparrows and others.

Spy Pond

Unlike other ponds in the vicinity of the project, Spy Pond is completely surrounded by houses and highways. Public access is limited and only the northeastern shoreline is in public ownership. Still, it is an important recreational resource which is used principally for fishing and boating.

The shoreline of the 103-acre pond is unwooded except for occasional shade trees. It averages 12 feet in depth and has a maximum depth of 36 feet. Bottom sediments are mainly muck with some sandy areas. Drainage is via a culvert to Little Pond and through Alewife Brook to the Mystic River. Spy Pond supports a warm water fishery.

According to the Massachusetts water quality classification system, Spy Pond is a Class B water, suitable for bathing and recreational water contact activities, and is an excellent fish habitat. Although Spy Pond is not presently used to supply potable water, treatment and disinfection make such use allowable under the present classification. Nutrient levels in the pond are quite high and may contravene the present water quality standards. Because of these nutrient levels, the lake is very fertile, producing an estimated fish crop of 260 pounds per acre per year, nearly twice the statewide average. Prior to 1957, however, less

than one percent were game fish--most were carp or other undesirable species. Consequently, the lake was reclaimed by removing the undesirable fish and restocking the lake with large-mouth bass, yellow perch, and brown bullheads. Bluegill, pumpkinseed, golden shiner and other panfish are also present.

In addition to its importance as a recreational fishing resource, Spy Pond also harbors waterfowl species, including mallard, pigeon and black ducks, canadian geese, coot and several species of gulls. While some of these birds become year-round inhabitants or spend either the winter or the summer in the area, Spy Pond, like the other ponds in the area, is also important as a stopover place during migrations.

Probable Impacts from the Project

The major ecological impact of the transit Red Line Extension would be a slight reduction in the bird habitat caused by the removal of trees and shrubs growing along the edge of the railroad right-of-way. The trees and shrubs in the yards of the homes adjacent to the right-of-way would not be affected and the wooded and park-like character of the section would not be altered on a long-term basis. Thus, many of the birds now found in the area would find suitable habitat after completion of the project.

Because Spy Pond is a valuable natural resource, its ecological sensitivity requires conservative construction practices to avoid siltation and filling. Sufficient space exists between the right-of-way and the pond for installation of erosion containment equipment. Other good construction practices, such as careful stockpiling of excavated earth, rapid sodding or seeding of exposed soil, mulching and riprapping would insure protection against any potential negative effects.

NOISE AND VIBRATION

Ambient Noise Conditions

The rapid transit alignment from Alewife to Arlington Center will be in Tunnel/Cut-and-Cover. Present ambient noise levels along this segment are high at both ends, but low in the center. The high noise levels at the east end of this segment are due to Route 2 and Alewife Brook Parkway traffic; west end noise levels are due to traffic on Massachusetts Avenue and Pleasant Street. The area between is highly residential with low speed local traffic and the noise environment is controlled.

The 24-hour noise level patterns at Arlington Center and at 40 Margaret Street in East Arlington are shown in Figures VII-7 and VII-8, respectively. The noise levels at the short term measurement sites are shown in Table VII-15.

Table VII-15

SHORT-TERM NOISE MEASUREMENT AT ARLINGTON

Site No.	Location	Time of Measurement	Sound Level in dBA			
			<u>L_{eq}</u>	<u>L₁₀</u>	<u>L₅₀</u>	<u>L₉₀</u>
5	Lafayette St., East Arlington	15:45	62	65	61	59
19	Playground, East Arlington	17:00	58	59	57	57
20	Hardy School, East Arlington	17:45	56	57	51	49
21	Elmhurst & Brook Sts., East Arlington	18:15	48	49	47	43
22	Wyman Terrace, East Arlington	13:45	55	57	51	45
10	Winslow Tower, Arlington Center	17:00	63	65	63	59
12	Town Hall, Arlington Center	13:30	67	71	63	61

See Figures II-1A-II-1E for noise measurement locations.

Based on this data, especially the information from Site No. 4, it is clear that the area between Alewife and Arlington fits the "quiet residential" description of Appendix D. Arlington Center fits into the "busy residential/semi-commercial" category.

Future Noise from Transit Operations

Airborne noise from train operations will not be a problem since the track will be in tunnel. Noise levels in Arlington Center may increase by three to four decibels at peak hour (a.m. rush hour) due to feeder buses serving the station. Off peak-hour bus traffic information is not available at this time.

Vibration

Ground vibration may be a problem in East Arlington unless special construction measures are taken. Residents in this area now complain of vibrations induced by a single car Budd Liner train that passes along the present Boston and Maine tracks at approximately 25 to 30 mph. The present tracks are not in a state of good repair, but even with welded rail, rapid transit operations may cause vibration problems because of their increased speed. Measurements of ground vibration levels taken 25 feet from the centerline of the MBTA South Shore track extension, indicate that vibration levels may exceed the threshold of perception by 15 to 20 decibels. Special trackwork may be necessary in areas where homes are within 100 feet of the track.

Impacts

Vibration may be a cause in East Arlington, but this can be controlled by design.

At Arlington Center the change in noise levels will be due to increased bus traffic, but the increase will only be a few decibels and this is negligible.

AIR QUALITY

Areawide air quality impacts and construction impacts were discussed in Chapter II, and the following discussion is restricted to localized CO effects in the vicinity of the Arlington Center Station. The details of the analytical methodology and the results are presented in Chapter III of Appendix H. The analytical method considered the effects of induced traffic at the station in making air quality projections.

The predicted levels of carbon monoxide in the vicinity of the Arlington Center Station in the 1974 base year, 1980 no-build case, and the three build alternatives are shown in Table VII-6. Note that CO levels for all 1980 cases are markedly lower than the 1974 levels. Although some build cases show slight increases for CO concentration over the no-build case, all levels are very low and no potential violations of CO ambient air quality standards are foreseen.

Table VII-16

PREDICTED CARBON MONOXIDE CONCENTRATIONS (PPM)
IN THE IMMEDIATE VICINITY OF
THE ARLINGTON CENTER STATION

Meterological Condition	Averaging Period	1974	1980: No Build Case	1980: Build Case Termination at:		
				Route 128	Arlington Heights	Alewife
Worst Case	8 Hours	2.8	1.4	1.7	1.7	1.4
	1 Hour	4.5	2.3	3.0	3.0	2.3
Most Probable	8 Hours	1.6	0.8	0.8	0.8	0.8
	1 Hour	1.9	1.0	1.1	1.2	1.0

CONSTRUCTION IMPACTS

The major adverse impacts of construction would be air and noise pollution, traffic disruptions, maintenance or re-locating of utilities, siltation and erosion, effect on existing structures, disposal of excavated materials, spillage, effects on groundwater table and possibility of encountering an underground stream. A discussion of the general construction impacts can be found in Chapter II. The remaining portion of this section discusses specific construction impacts applicable to this segment.

Traffic Disruption

In Arlington Center, temporary decking and construction staging would permit continuous traffic operations on Massachusetts Avenue, Swan Place and Mystic Street. Temporary detours would be provided at cross streets such as Lake Street, Linwood Street, Pond Lane and Whittemore Street. For a discussion, see Page VII-8.

It is assumed that the discontinuance of commuter rail and freight service on the Lexington Branch would occur prior to initiation of construction.

Utilities

There are some major utilities requiring maintenance or relocation during construction. For a listing of the utilities see Page VII-2. In addition, at Alewife just north of Route 2, a gas transmission line will have to be relocated.

Parks, Recreation and Historic Resources

The impact on the historic resources is minimal. For a discussion of impacts see Pages VII-62 and VII-63.

There are several public parks and recreation areas located in this segment. For a discussion of impacts see Page VII-59,

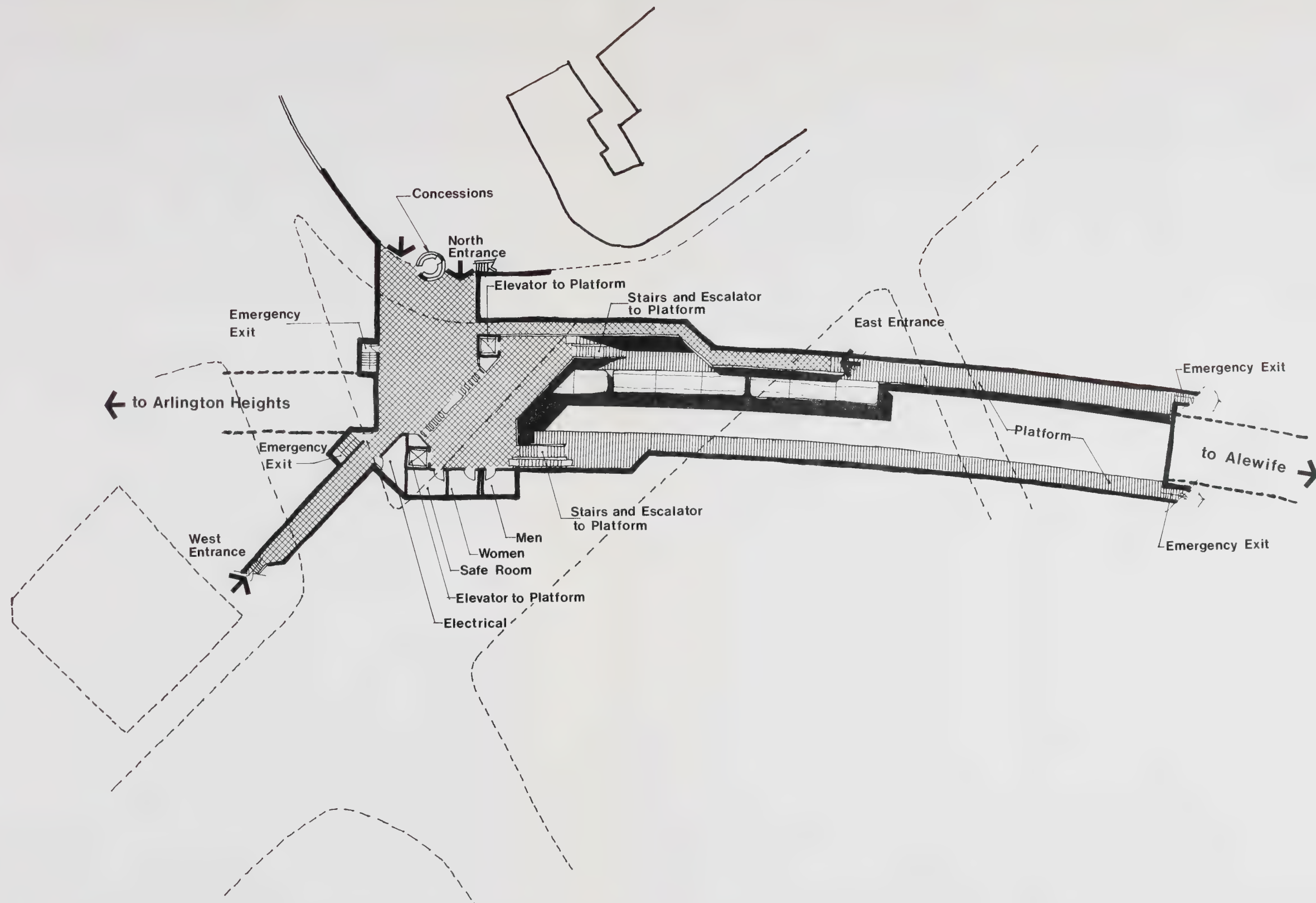
Disposal of Excavated Materials

It is estimated that there will be 335,000 cubic yards of excavated materials in this segment.

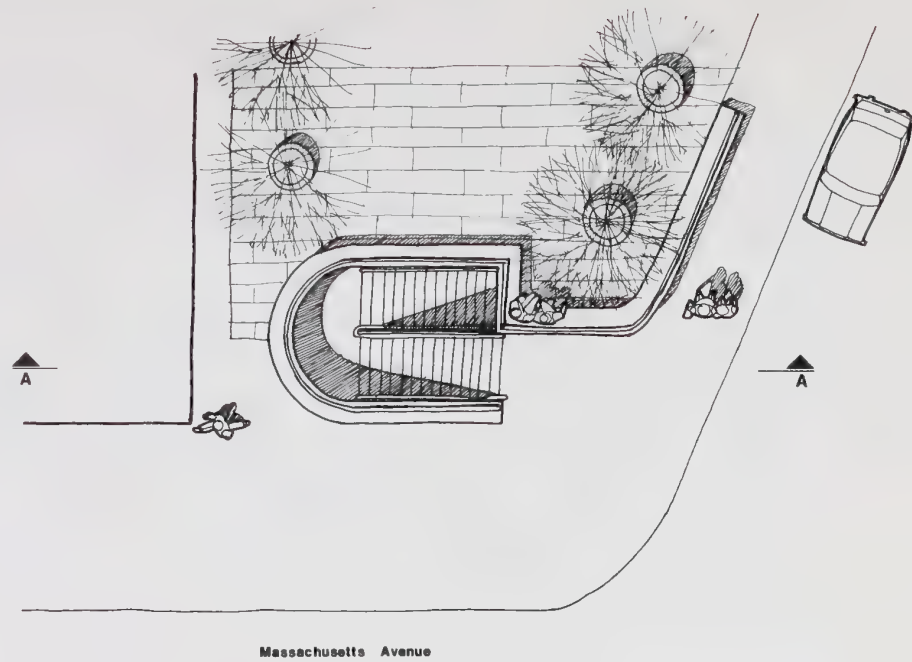










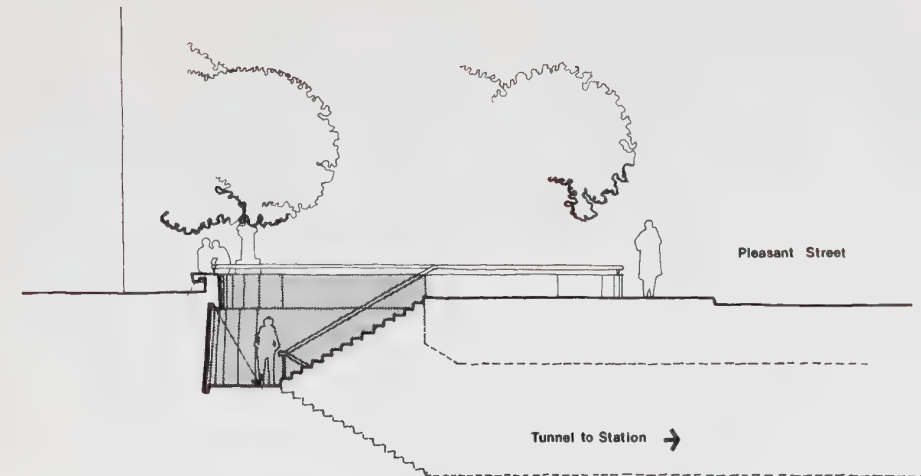


East Entrance

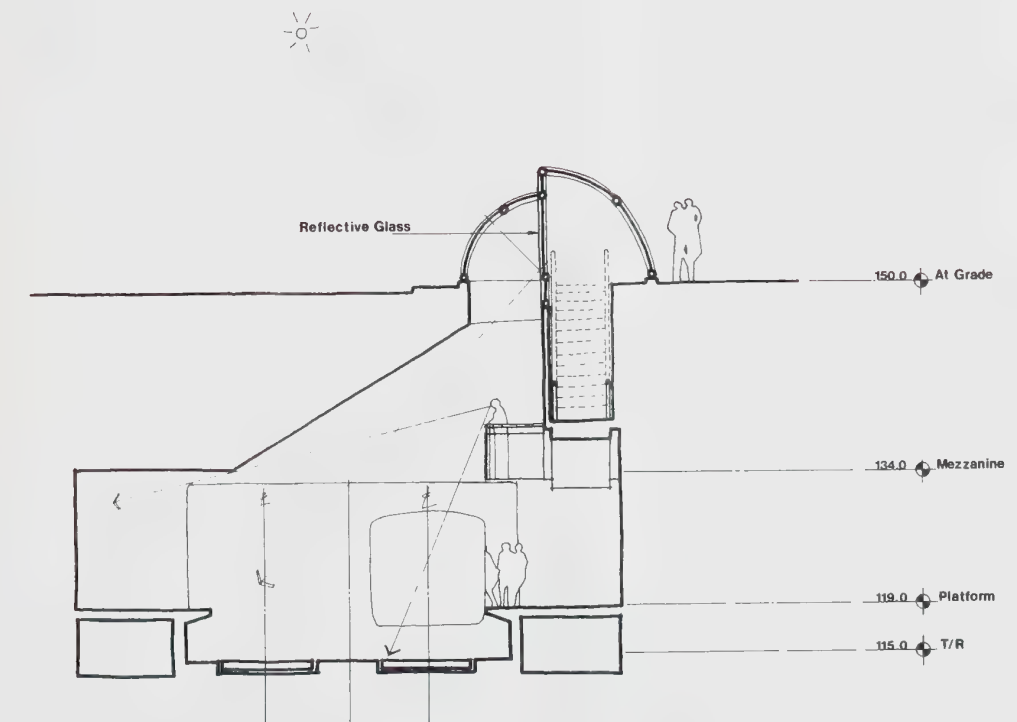
Massachusetts Avenue



West Entrance

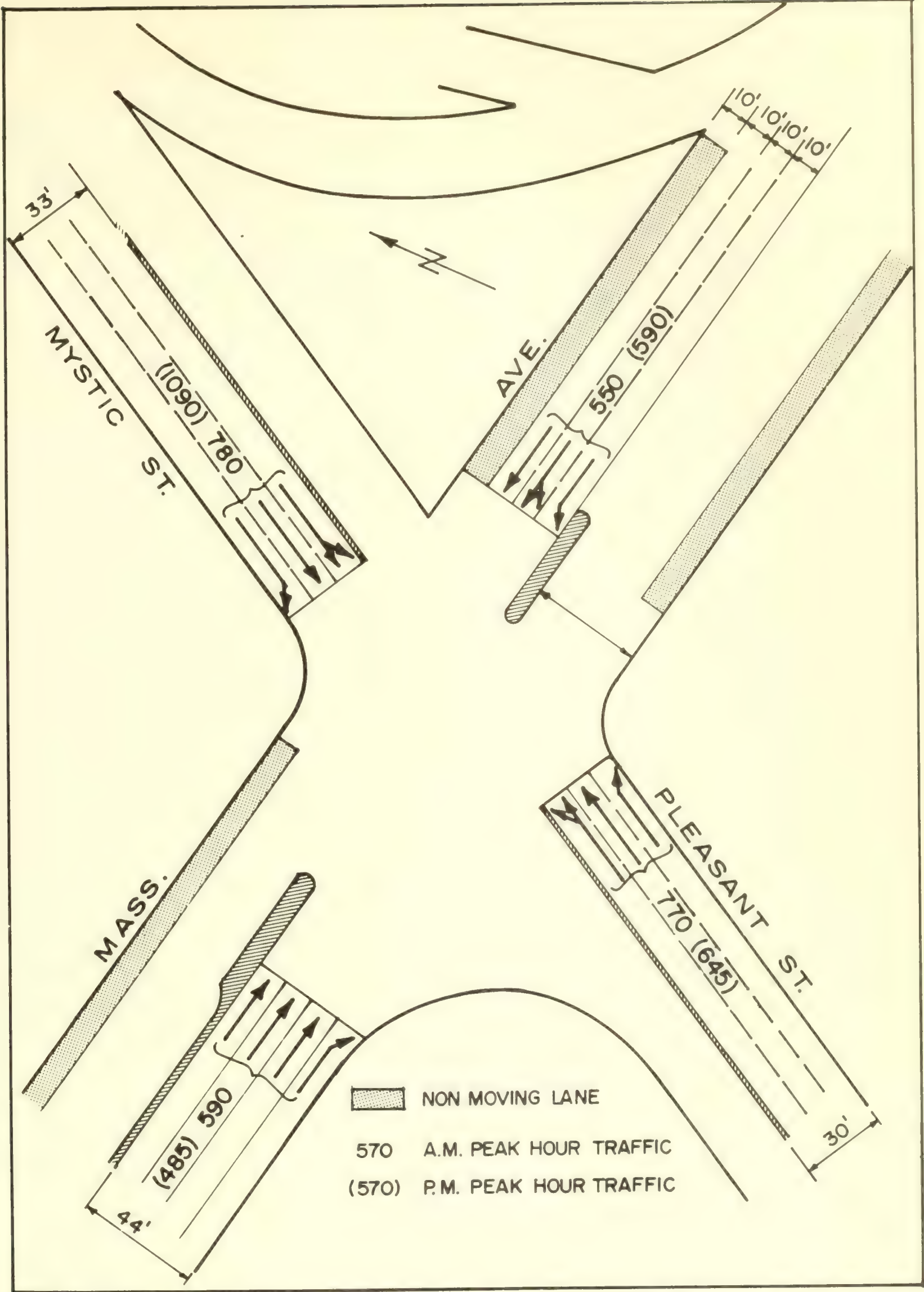


Section A-A



Section B-B

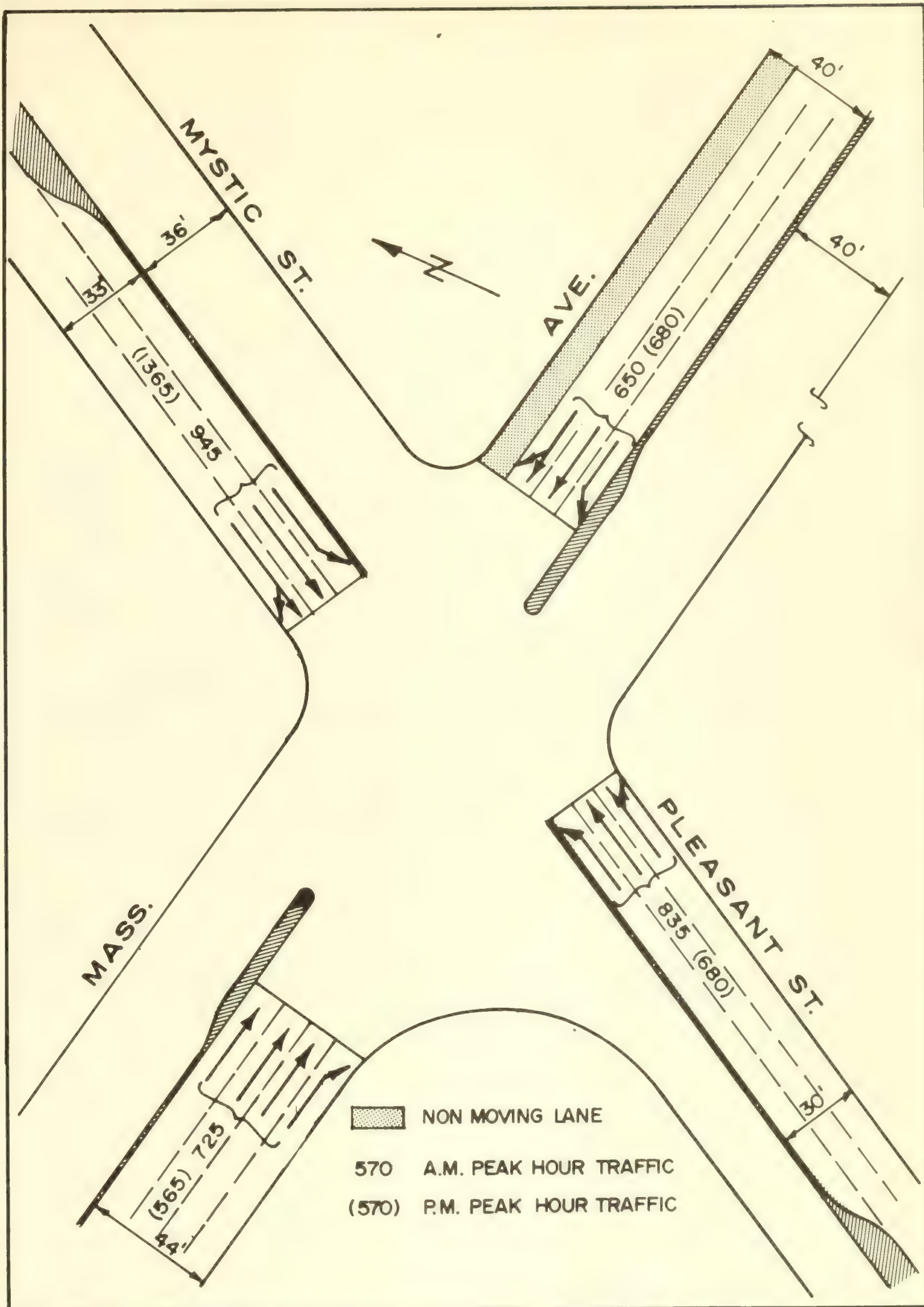




RED LINE EXTENSION STUDY
Massachusetts Bay Transportation Authority

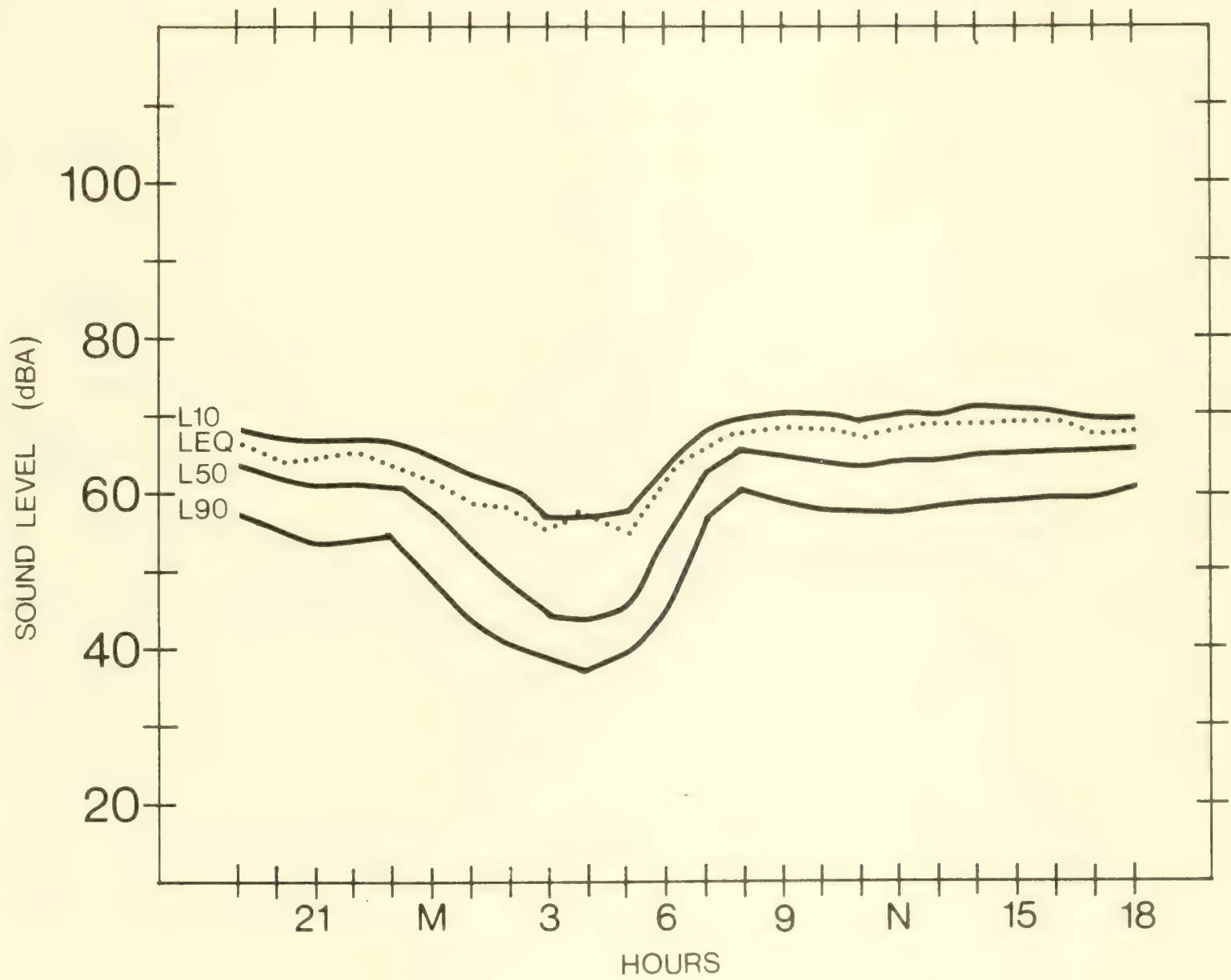
ARLINGTON CENTER
EXISTING CONDITIONS
FIG. VII-5



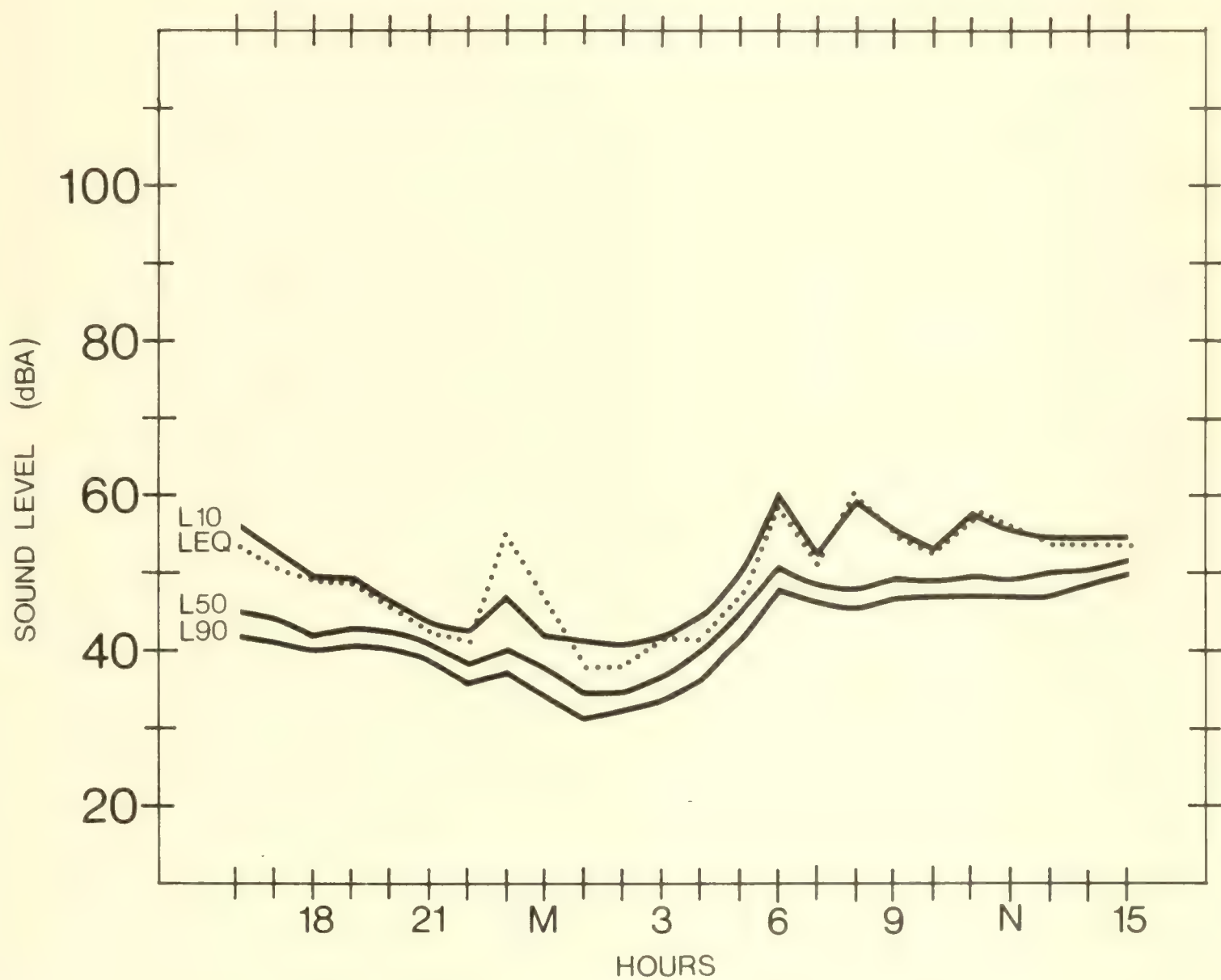


RED LINE EXTENSION STUDY
Massachusetts Bay Transportation Authority

ARLINGTON CENTER
PROPOSED IMPROVEMENTS
FIG. VII 6







RED LINE EXTENSION STUDY
Massachusetts Bay Transportation Authority

EAST ARLINGTON
DIURNAL NOISE PATTERN
FIG. VII-8



Chapter VIII

ARLINGTON CENTER TO ARLINGTON HEIGHTS

Chapter VIII

ARLINGTON CENTER TO ARLINGTON HEIGHTS

PROJECT DESCRIPTION

From the Arlington Center Station west to Arlington Heights--approximately 2.4 miles--the Red Line Extension would be within the right-of-way of the MBTA Commuter Rail Lexington Branch. A below grade station would be located at Arlington Heights west of Park Avenue. The parking, kiss-and-ride and bus facilities at Arlington Heights as well as the station configuration as described in this Chapter are preliminary and subject to further analysis and development to assure consistency with the results of the ongoing Minuteman Area Transit Improvement Study.

Recently, the MBTA has acquired the railroad right-of-way and the project assumes the subsequent abandonment of railroad operations on the Lexington Branch.

Line Segment

The horizontal and vertical alignment for this segment was developed following detailed analysis of the alternatives. The proposed alignment reflects the concerns of Arlington citizens and public officials. Principal criteria included the limiting of recreational and residential land takings by remaining within the Lexington Branch right-of-way to the maximum extent possible and the placing of the entire line segment as well as Arlington Heights Station underground using cut-and-cover construction.

This segment of the Red Line would remain in Tunnel/Cut-and-Cover from Arlington Center Station through Arlington Heights Station. A storage and turnback area consisting of three tracks within a widened tunnel section would be furnished by extending the tracks 1,130 feet west of the Station. A double crossover would be provided before the Station and a single crossover would be constructed beyond the Station prior to the turnback and storage area.

Major vertical constraints would be the Mill Brook culvert west of Water Street and street and utility crossings along the right-of-way. See Figures II-1D and II-1E.

The existing Lexington Branch is at-grade through Arlington Center, with crossings at Massachusetts Avenue, Mystic Street, Water Street and Mill Street. Massachusetts Avenue and Mystic Street are major traffic arteries; adjacent property is heavily developed in commercial uses. The railroad bisects the Whittemore Historic Park and, at Mystic Street, passes adjacent to Winslow Tower, a multistory housing complex for the elderly.

A private parking lot, Fowles Pond Field, and the former NewEngland Farms plant lie on either side of the rail line between Water and Mill Streets. There are five railroad sidings in this area, four serving New England Farms and one community siding serving several small businesses.

Beyond Mill Street, the railroad is on embankment along Arlington High School. The Lexington Branch continues on embankment, varying in height from a few feet to 25 feet west of Forest Street. Between Forest and Lowell Streets near Mount Gilboa, the terrain rises and sections of the Lexington Branch through Arlington Heights are depressed as much as ten feet below ground level. There are no at-grade crossings beyond Mill Street. The railroad passes over Grove Street, Brattle Street and Forest Street in the embankment area and under Lowell Street and Park Avenue along the steep depressed area. At Lowell Street and Park Avenue, the steep approaches to the grade separation structures create "humpbacked" crossings with poor vertical sight distances. These bridges are old wooden structures with 27-foot spans and five-ton load limits.

Major utility crossings in this segment include a 42-inch MDC interceptor sewer between Water and Mill Streets, a 36-inch MDC sewer near Arlington Heights, a 30-inch storm drain near Ryder Street, a 36-inch storm sewer near Summer Street, and a 24-inch MDC water main near the MDC pumping station. In addition to these utilities, there is a 16-inch high-pressure gas transmission line east of Grove Street.

Mill Brook crosses the MBTA Lexington Branch twice: east of Mill Street and at Arlington Heights.

Within this segment of the Red Line Extension project, all existing railroad trackage, structures and embankment would be removed. All streets passing over the tunnel will be reconstructed and existing bridges and abutments will be removed. Since track

level in the cut-and-cover section would be 18 to 25 feet below ground, the inadequate grades and clearances at the Brattle Street and Forest Street crossings would be eliminated and sight distances at the Lowell Street and Park Avenue bridges would be improved. The width of right-of-way available on the alignment would permit the development of linear parks along much of this segment by the Town of Arlington.

The proposed alignment would turn westerly on a compound curve, slightly south of the railroad right-of-way adjacent to the Winslow Tower property line. The line would continue westerly, rising on a 2.6 percent grade to clear the Mill Brook culvert and the two MDC sewer lines.

Beyond Water Street, the line would generally follow the centerline of the existing railroad right-of-way. The grade would be relatively flat through Grove Street, but would increase beyond Grove Street through Forest Street in order to follow the rising ground level and to minimize excavation requirements. Major reconstruction of all these streets would be necessary. Since the existing railroad right-of-way narrows to 35 feet in the vicinity of Brattle Street, a small parcel of land would have to be acquired for an easement.

Beyond Forest Street, the line would ascend on a 2.0 percent grade to 0.0 percent at Arlington Heights Station.

Ventilation of the underground transit line would be achieved by the use of blast relief shafts 100' from the Arlington Center Station and 100' from each end of the Arlington Heights Station. In addition, six additional fan shafts would be included in the tunnel construction between the stations. All ventilation shafts would be in the Lexington Branch right-of-way. Preliminary locations are as follows:

- Arlington Center Station
- 50' east of Mill Street
- 250' east of Grove Street
- 50' west of Brattle Street
- 50' west of Ryder Street
- 400' west of Lowell Street
- Arlington Heights Station
- 1135' west of Station Platform

Construction of the Arlington Heights Station would necessitate hydraulic improvements to Mill Brook. The existing railroad section is semi-depressed forming a natural channel for the flood waters of Mill Brook. Hydrological studies of Mill Brook at Arlington Heights indicate that a 100-year storm under present conditions would cause extensive flooding and damage. As shown in Figure VIII-2, preliminary investigations indicate the following sequential construction improvements could be made to Mill Brook to eliminate flooding dangers:

- (1) Remove existing twin 3' x 5' arch culverts located west of the Arlington Coal and Lumber Co. yard.
- (2) Relocate Mill Brook into a 7' x 5' open rectangular channel east of the Arlington Heights Station.
- (3) Relocate and construct a new 7' x 5' box culvert with a junction box to pass under 53A Park Avenue and cross under Park Avenue, connecting to the existing channel.
- (4) Improve hydraulic conditions for the existing 72-inch culvert inlet south of the Atlantic Roofing and Skylight Works.
- (5) Excavate the improved channel slopes to a grade of about 0.5 percent.

Station

The plans for the station as described below were prepared in collaboration with the Arlington Heights Task Force, made up of local residents and businessmen. It must be emphasized, however, that the Task Force has taken the position that the results of the ongoing Lexington study must be known to them before they can take a final position on the Arlington Heights facility.

Entry and Exit Points

The proposed Arlington Heights Station would be underground and would lie entirely within the Boston and Maine right-of-way. The station would be 450 feet long and would be located just north of the MBTA bus yard, extending westward to the A & P supermarket. The entrance to the station would be via a headhouse located in the center of the bus island, directly above the eastern end of the station platform. Pedestrian access from Massachusetts Avenue to the headhouse would be through walkways along the landscaped areas east and west of the station complex. See Figures. The possibility of direct access from the Colonial Village Apartments was investigated. Owners of the complex decided that they would keep their property fenced off from the transit station primarily to discourage use of their parking lot by Red Line patrons.

An escalator and a stairway would connect the headhouse to the station platform. An elevator, also located in the headhouse, would provide access to the platform for the handicapped and elderly transit patrons. An emergency exit stairway would be provided at the western end of the station platform. Access to and from the parking garage would be through a stairway and an elevator situated in the headhouse. Additional stairways would be provided at the western end of the garage.

Provisions for the Handicapped and Elderly

Ramped curbs would be installed in the loading/unloading area for wheelchair users. Park-and-ride patrons unable to use stairs would utilize the elevator to go down to the headhouse, then after paying their fares, proceed to the station platform by means of the elevator located adjacent to the attendant's booth, inside the fare zone. A wider fare gate would be necessary to permit wheelchairs to enter.

Provision for a special transit stop at the Drake Village housing complex for the elderly was requested by the Arlington Council on Aging. This proposal was found to be in conflict with transit operational and safety requirements. It would introduce another transit stop only 1,000 feet west of the proposed Arlington Heights Station. The only alternative would have been to locate the Arlington Heights Station adjacent to Drake Village. Property takings, including many residences as well as businesses, would have been necessary at the proposed site.

Fare Collection

A single fare collection area, located in the headhouse above the eastern end of the center platform, would be required.

Bus Loading/Unloading and Parking Facilities

Buses and all other vehicles would enter the station area at the east end of the site and exit on the west side. Six bus bays would be provided on the ground level of the station complex, alongside the station headhouse.

Kiss-and-ride facilities would include a drop-off lane, separated from the busway by an island, and a waiting area with approximately forty parking spaces. Ramps leading to and from the parking garage would be located on the eastern and western ends of the garage, respectively. The proposed two-level parking garage would accommodate 350 cars.

Joint Development Concepts

Plans for the joint development of commercial space were not included in the Arlington Heights station plan. Transportation Advisory Group members emphasized that Arlington Heights residents felt that such development might alter the existing character of the area as a neighborhood shopping district. Both businessmen and residents did point out the need for convenient commercial parking in Arlington Heights. The MBTA commuter parking lot on the south side of Massachusetts Avenue could be used for this purpose.

Plans for the joint development of new linear open space along the Arlington Center to Arlington Heights line segment are similar to plans for East Arlington. The right-of-way would be graded, loamed and seeded for possible development as parkland by the Town of Arlington.

Right-of-Way

The primary right-of-way acquisition for the recommended alternative from Arlington Center to Arlington Heights would be the MBTA Commuter Rail Lexington Branch right-of-way. Transit construction would necessitate the abandonment of railroad operations through Arlington, Lexington and Bedford.

Table VIII-1 indicates the parcels of land that would have to be acquired for construction of the project.

Table VIII-1

RIGHT-OF-WAY REQUIREMENTS
ARLINGTON CENTER TO ARLINGTON HEIGHTS

<u>Address</u>	<u>Type</u>	<u>Use</u>
1345 Massachusetts Avenue	Commercial	Partial Taking
Brattle Street	Industry	Permanent Easement
53A Park Avenue	Commercial	Total Taking
Colonial Village Parking Lot	Residential	Partial Taking

Construction Considerations

The entire portion of this segment of the Red Line would be in Cut-and-Cover Tunnel.

Regardless of whether a linear park is developed or not by the Town, the underground nature of the Project will allow free and safe access over the right-of-way by all pedestrians.

Certain buildings, such as Winslow Tower and Brigham's Processing Plant, would require some protective measures to prevent ground movements and surface settlements. The needs of each particular case would be studied and conventional underpinning would be used where no other acceptable alternative would be practical. In many cases, grouting or cutoff walls may be more effective than underpinning.

Construction would progress from Arlington Center to Arlington Heights. The existing railroad could be utilized to deliver and remove materials west of the work face. Handling materials via the railroad would minimize trucking impacts on local streets in the populated areas of Arlington. In less populated areas materials could be transferred to trucks for final disposition.

In areas where the line passes under roadways, the existing structures or streets shall be removed, or excavated, the tunnel section constructed and properly backfilled and a new street pavement constructed. Traffic would either be rerouted to adjacent streets or temporary bypass routes built for use until temporary decking is in place.

Sections under construction would be entirely enclosed with fencing and detours clearly marked.

The Arlington Heights Station would be under a separate construction contract and it would be scheduled for completion simultaneously with the transit line. Construction of this section of the project would take about 36 months. Construction of a cut-and-cover station at Arlington Heights would take approximately 36 months. See Table VIII-2.

Table VIII-2

ESTIMATED CONSTRUCTION TIME

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
Tunnel/Cut-and-Cover to Arlington Heights					
Arlington Heights Station					

Costs

An itemized breakdown of transit construction costs is presented in Table VIII-3. The estimate for the line segment from the end of the Arlington Center Station to the beginning of the Arlington Heights Station includes interim turnback and storage facilities at Arlington Heights. The costs do not include project wide items such as floating slabs, trackwork ventilation, electrification, signalization and communications. For these costs see Chapter II. The estimate is based on midpoint of construction Dollar value.

Table VIII-3

CONSTRUCTION COST ESTIMATES
ARLINGTON CENTER TO ARLINGTON HEIGHTS
(Costs do not include project wide items)

<u>Item</u>	<u>Cost</u>
(Tunnel/Cut-and-Cover)	
<u>MAC Code</u>	<u>Description</u> <u>Amount</u>
15.13.00	Transit Structure \$84,402,000
15.13.10.12	Utility Relocation 1,007,000
15.13.00	Raising & Repaving of Streets 394,000
15.13.00	Removal of Bridges 568,000
	\$ 86,371,000
15.06.10	Right-of-Way 500,000
31.00.00	Relocation 200,000
	700,000
15.08.01	Professional Services 4,318,500
15.08.02	Field Inspection 2,669,000
15.15.02	Force Account 1,295,500
15.16.00	Project Administration 5,362,000
	13,645,000
	Subtotal \$100,716,000
32.00.00	Contingencies 8,637,000
	Total \$109,353,000
Arlington Heights Station Complex (Cut-and-Cover)	
<u>MAC Code</u>	<u>Description</u> <u>Amount</u>
15.11.10	Station Structure \$19,000,000
15.11.40	Parking Garage 4,320,000
	\$ 23,320,000
15.06.10	Right-of-Way 50,000
	50,000
15.08.01	Professional Services 1,166,000
15.08.02	Field Inspection 720,500
15.15.02	Force Account 350,000
15.16.00	Project Administration 1,444,500
	3,681,000
	Subtotal \$ 27,051,000
32.00.00	Contingencies 2,332,000
	Total \$ 29,383,000
	Total for Segment \$138,736,000

MINUTEMAN AREA TRANSIT STUDY

The Minuteman Area Transit Study Feasibility Report of February 1977 summarizes the major findings, recommendations and conclusions of a study of 17 alternative transportation improvement packages. Seven of the alternatives were variations in the fixed bus route system in the Minuteman Area. The remaining ten alternatives relate to line haul service improvements based upon an extension of the Red Line to Arlington Heights.

Of the ten line haul alternatives, four were dropped early in the study because of inappropriate technologies, excessive costs in relation to benefits, unacceptable levels of impacts, or combination of these reasons. The six alternatives which were carried forward for more detailed study included:

A Baseline Case, assuming the Red Line extension terminal at Arlington Heights, as presented in previous work of the MBTA, with feeder bus service on surface streets through the Minuteman Area;

An Arlington Heights/East Lexington Terminal to the Red Line--involving revision of the Arlington Heights station to minimize local impacts (e.g., congested local streets), substitution of an East Lexington terminal for the Arlington Heights station, or a combined terminal involving two stations;

A Red Line Extension To Route 128 (Hartwell Avenue) via the Bedford branch; using current Red Line technology;

A Red Line Extension to Route 128 at Burlington Mall via either North Lexington or Route 128, using current Red Line technology;

Modified Red Line Technology from Arlington Heights to Bedford Center, using overhead power pickup beyond Arlington Heights;

Conventional Bus on an Exclusive Busway along the Bedford branch right-of-way to Route 128 at Hartwell Avenue, with a possible extension to Bedford Center.

The potential impacts of each of the line haul alternatives were identified as follows:

The Baseline Case is the least expensive option, but provides the lowest levels of patronage. The Town

of Arlington has stated that such an option is unacceptable because of the perceived impacts associated with a transit terminal in the Arlington Heights area;

The Arlington Heights/East Lexington Terminal Options may offer the potential to reduce impacts on Arlington Heights, although the possibility exists that impacts could be shifted to other locations, such as East Lexington. The Arlington Heights/East Lexington terminal options represent refinements of the location and design of the base case.

The Red Line Extension Options, using conventional Red Line technology, are as a group, the most expensive of the alternatives. On the other hand, they offer the largest benefits in terms of increased patronage. However, the estimated level of patronage would still be sufficiently low to cause an extremely high per trip cost for such a system between Arlington Heights and the terminal. The major difference between a Hartwell Avenue and a Burlington Mall terminal is the higher cost and higher patronage associated with the latter: higher costs are due to a longer route length; higher ridership is due to the location of Burlington Mall at a major transportation node in the subregion.

Despite these unfavorable cost/revenue relationships, it is recommended that the Red Line extension options be carried forward into Phase II in order to assess the magnitude and significance of the relief which these options might provide for automobile and bus feeder traffic at stations at Arlington Heights, Arlington Center, and Alewife.

The Modified Red Line Technology Option has significantly lower cost than the full Red Line technology, but attracts less patronage due to slower running times necessitated by grade crossings between Arlington Heights and its terminal at either Hartwell Avenue or Bedford Center. The cost/revenue ratio of this option is still unfavorable, but it has the potential to offer many of the benefits of a full Red Line extension at reduced costs, and is therefore recommended for Phase II study;

The Exclusive Busway Option has a significantly lower cost than any of the other options, except the baseline case, but would capture a large share of the Red Line Extension patronage. Due to the frequency of bus service which might be available on such a system, and the relative economies of express bus operations, the cost/revenue relationships are favorable--the best of any of the options studied. This option provides operational flexibility and the potential of extending the transit corridor to Route 128 at relatively modest cost in the mid-term future. It is recommended for Phase II study both to further analyze these potential advantages, as well as to identify and analyze the potential disadvantages of express bus operations on the area and the related stations.

ALTERNATIVES

Line Segment Alternatives

Two alternatives to the proposed alignment for the Arlington Center to Arlington Heights Section that underwent detailed analyses were: a tunnel/cut-and-cover alternative in which freight operations would remain above the tunnel at-grade and an at-grade alternative. Under the tunnel/cut-and-cover alternative, the station at Arlington Heights would be constructed below grade by the cut-and-cover method.

At-Grade Alternative

The proposed BTPR at-grade transit alignment from Mill Street to Arlington Heights along the Lexington Branch right-of-way can be described as follows:

"Mill Street to Grove Street--From Mill Street, the transit line would leave the Arlington Center tunnel in an open cut and rise to grade at a point approximately 1,000 feet beyond Mill Street. At that point, the rising gradient would continue onto the existing embankment, bridging over Grove Street on a new bridge at the same elevation as the existing bridge. As the transit line would be rising out of an open cut, no option exists in this segment for covering over any portion of the transit line."

"Grove Street to Forest Street--The transit line would follow the level of the existing embankment for the length of this segment. New bridges would be required over Brattle Street and Forest Street. A new pedestrian overpass or underpass would be required at Ryder Street to replace the existing pedestrian grade crossing."

"Forest Street to Arlington Heights--From the new transit bridge over Forest Street...the adjacent ground rises to a level higher than the right-of-way. Accordingly, the transit line will be on the existing embankment at Forest Street, at grade about 500 feet past Forest, in a cut under Lowell Street and Park Avenue, and at grade at the Arlington Heights Station area. The Lowell Street and Park Avenue bridge...superstructures are in poor condition and should be rebuilt to prevent weakening from transit vibration effect."

The at-grade alternative developed during the course of the present study closely follows the above BTPR description.

Engineering review and evaluation of the BTPR alignment in relation to the most recent MBTA design standards indicated that the at-grade alternative would meet engineering criteria for this section. As indicated in the BTPR description, the tunnel/cut-and-cover at the Arlington Center Station and the close proximity of Water Street and Mill Street would necessitate an intermediate depressed section which would rise to existing grade

west of Mill Street. East of Mill Street, transitways would descend on a 2.4 percent grade to an intermediate depressed section; west of Mill Street, the Red Line would ascend on a 2.5 percent grade to the at-grade elevation. No other significant grade changes in the existing ground line would be necessary. The horizontal alignment would follow the Lexington Branch right-of-way to Arlington Heights.

New transit structures would be required at the Grove Street, Forest Street and Brattle Street crossings to replace existing single-track structures. Street improvements would be required at the Forest Street and Brattle Street crossings to increase vertical clearances, widen the street, and/or improve sight distances. The "humpback" profiles of the Lowell Street and Park Avenue bridges would be improved, necessitating some reconstruction of these streets.

To eliminate potential flooding at the Arlington Heights Station, the Mill Brook culvert and channel reconstruction proposed for the recommended project would also be necessary for the at-grade alternative except that a culvert would be required for passing under the transit/station track alignment.

Land acquisition would be as described for the Project. The horizontal alignment would be the same as the Project and, although retaining walls would not be required, there would be no significant reduction in the amount of right-of-way required.

Construction necessary to convert the existing railroad right-of-way would basically consist of new grade separation structures, track bed improvements and installation of continuously welded rails, electrified third rail and new fencing. Except for Mystic Street the other streets have low volumes of residential traffic which could be detoured during construction. Since Mystic Street is a major intracity arterial, traffic operations should be maintained during construction of the transit line. As Mystic Street is in the tunnel/cut-and-cover portion of this section, temporary decking would be used.

Table VII-4 presents the construction sequence for the at-grade alternative.

Table VIII-4

ESTIMATED CONSTRUCTION TIME
AT-GRADE ALTERNATIVE

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
At-Grade to Arlington Heights			■	■	
Arlington Heights Station		■	■	■	■

Table VII-5 presents construction costs for at-grade alternative with an at-grade station at Arlington Heights. The costs do include project wide items and reflect 1975 Dollar value.

Table VIII-5 presents construction costs for at-grade alternative with an at-grade station at Arlington Heights.

Table VIII-5

ESTIMATED CONSTRUCTION COSTS
AT-GRADE ALTERNATIVE WITH AT-GRADE STATION
(1975 Dollars)

Arlington Center to Arlington Heights

Transit Structure	\$ 7,205,000
Floating Slab	710,000
Trackwork	5,067,000
Electrification	2,703,000
Signaling	2,240,000
Ventilation	300,000
Utility Relocation	190,000
New Bridges	1,210,000
Fencing	320,000
Remove Railroad Track	146,000
Subtotal	\$20,091,000
Other Project Costs	5,023,000
TOTAL, Line Segment	\$25,114,000
Say	\$25,110,000

Table VIII-5 (cont'd)

Arlington Heights Station (At-Grade)

Station	\$ 2,080,000
Parking Garage	<u>1,840,000</u>
Subtotal	\$ 3,920,000
Other Project Costs	<u>980,000</u>
TOTAL, Station At-Grade	\$ 4,900,000
Say	<u>\$ 4,900,000</u>
Section Total	\$30,010,000

The major advantage of the at-grade alternative is its relatively low construction cost. Its disadvantages include visual intrusion and disruption of neighborhoods near the tracks as well as the creation of a permanent physical barrier between the northern and southern portions of Arlington. Present railroad traffic on the Lexington Branch is light, and the right-of-way serves as a pedestrian walkway between neighborhoods, playgrounds, schools and local shopping centers. A heavily travelled at-grade transit line with electrified rails and protective fences would preclude pedestrian crossings and effectively bisect the Town of Arlington. The Arlington Board of Selectmen has strongly opposed an at-grade alignment in official policy statements. In addition, the at-grade alternative is generally unpopular with Arlington residents. For these reasons, therefore, this alternative was not recommended.

Dual Transit and Freight Operations

This alternative assumes that the single-track freight line would be retained; that freight operations would continue; and that a two-track transit line would share the railroad right-of-way from Arlington Center to the Arlington Heights Station. This alternative would be a continuation of the dual transit and freight line alternative described in Chapter VII for the Alewife to Arlington Center segment. As discussed in that chapter, a three-track system with both railroad and transit operations at-grade, or a completely depressed system with the freight line depressed or in tunnel/cut-and-cover would have severe impacts on adjacent land

uses and would require extensive land acquisition. For these reasons, the dual transit and freight line alternative selected for further analysis assumed retention of the freight line at-grade, and construction of the transit extension in tunnel/cut-and-cover.

The freight line would remain on its present alignment with at-grade crossings at Mystic, Water and Mill Streets. Grade separations and embankments at Grove Street, Brattle Street, Forest Street, Park Avenue, Lowell Street, and Drake Road would also be retained. There would be about five feet of cover over the transit tunnel at all cross streets except Mill Street. This cover would be sufficient to permit maintenance of utilities or some relocations within the street. In order to clear the Mill Brook culvert, the tunnel/cut-and-cover section at Mill Street would only have about two feet of cover and existing utilities at this location would be relocated.

All ventilation shafts for the transit tunnel would be within the Lexington Branch right-of-way. Preliminary locations are as follows:

- Four ventilation shafts: near Mill Street; 300 feet east of Brattle Street; 500 feet east of Ryder Street; and near Park Avenue.
- Two fan shafts: 300 feet east of Grove Street and near the intersection of Lennon Road with Bow Street.

Potential vibration and noise impacts on structures adjacent to the transit line would be minimized by installation of floating track beds, continuously welded rails and/or deep ballast.

Land acquisition requirements for the dual transit and freight alternative would be the same as for the recommended project.

This segment of the Red Line would remain in tunnel/cut-and-cover from Arlington Center Station through Arlington Heights Station. An interim storage area would be furnished by extending the two-track transit line about 1130 feet west of the Arlington Heights Station. Double crossover trackwork would be installed on both sides of the station.

In areas where the Lexington Branch right-of-way is less than 50 feet wide, tunnel construction would be staged in two sections to permit temporary relocation of the rail line. In areas where the right-of-way is wider, the rail line could be temporarily relocated adjacent to the tunnel. Careful consideration would have to be given to excavation support and/or railroad track support systems as well as to the underpinning of existing street structures.

Temporary decking would be required at Mystic and Water Streets. At other street crossings, traffic would be rerouted to adjacent streets or utilize temporary detours during construction. The railroad right-of-way would be used for material handling to minimize impacts on adjacent residential areas. Existing utilities would be temporarily supported and those crossing Mill Street would be relocated during construction, in order to maintain services during construction.

Table VIII-6 presents the construction sequence for the dual transit and freight line alternative. The Arlington Heights Station would be under a separate construction contract scheduled for completion simultaneously with the transit line. Construction of the transit and railroad under the dual operation alternative would take about 42 months. Construction of an underground station at Arlington Heights would take approximately 36 months.

Table VIII-6

ESTIMATED CONSTRUCTION TIME
DUAL TRANSIT AND FREIGHT LINE ALTERNATIVE

Construction Phase	Time in Years				
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
Tunnel/cut-and-cover with at-grade railroad line to Arlington Heights					
Arlington Heights Station					

Estimated construction costs for the dual transit and freight line alternative are presented in Table VIII-7. This estimate is based on 1975 Dollars and includes Project wide items.

Table VIII-7

ESTIMATED CONSTRUCTION COSTS
DUAL TRANSIT AND FREIGHT LINE ALTERNATIVE
(1975 Dollars)

Arlington Center to Arlington Heights

Transit Costs

Transit Structure	\$32,607,000
Floating Slab	4,477,000
Transit Trackwork	4,909,000
Electrification	2,619,000
Signaling	2,081,000
Ventilation	1,320,000
Track Removal	134,000
Utility Relocation	192,000
Decking and Paving	220,000
Subtotal	\$48,559,000
Other Project Costs	12,140,000
Transit Cost	\$60,699,000

Table VIII-7 (cont'd)

Railroad Costs

Signaling	\$ 382,000
Trackwork	1,402,000
Fencing	<u>346,000</u>
Subtotal	\$ 2,130,000
Other Project Costs	<u>533,000</u>
Railroad Cost	\$ 2,663,000

Transit Cost	\$60,699,000
Railroad Cost	<u>2,663,000</u>
TOTAL	\$63,362,000

Arlington Heights Station

Station	\$ 7,040,000
Parking Garage	<u>1,840,000</u>
Subtotal	\$ 8,880,000
Other Project Costs	<u>2,220,000</u>
TOTAL	\$11,100,000

If the ICC rules that the freight service must be maintained on the MBTA Commuter Rail Lexington Branch, this alternative appears to be the most viable. Other dual transit and freight systems studied had severe community and engineering limitations. Implementation of this alternative would preclude the planned linear parks over the transit line. This alternative is also unacceptable to Arlington officials and citizens, who favor removal of the freight line.

TRAFFIC AND TRANSPORTATION

Existing Conditions

The Arlington Heights Station would be located on MBTA property between Massachusetts Avenue and the railroad right-of-way, just west of Park Avenue. Although vehicular access would be via Massachusetts Avenue, Park Avenue would also carry a substantial portion of station-bound vehicles arriving from the north and south. The estimated 1975 Average Daily Traffic (ADT) on Massachusetts Avenue and the forecast 1980, 1985 and 2000 ADT (without the project) are shown below:

Table VIII-8

ESTIMATED AVERAGE DAILY TRAFFIC ARLINGTON HEIGHTS STATION

<u>ROUTE</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>2000</u>
Massachusetts Avenue	13,300	13,800	14,400	16,200

The intersection of Massachusetts Avenue and Park Avenue is controlled by a fixed-time signal. Existing traffic conditions in Arlington Heights are characterized by stable flow and moderate operating speeds. Large vehicular volumes eastbound along Massachusetts Avenue, particularly during the morning peak, contribute to minor delay at the Massachusetts Avenue/Park Avenue intersection. Parallel parking on the west side of Park Avenue, north of the intersection, creates minor backups and restricted maneuverability during the morning peak. Southbound traffic on Park Avenue during the evening peak sometimes creates "jammed" conditions.

Accidents have occurred at a number of the rail-highway crossings in area. Arlington Police Department records document an auto-train accident and two automobile accidents at the Mill Street grade crossing. Accidents have also been reported on Grove Street between Dudley Street and Grove Street Place in the vicinity of the Grove Street underpass. Vertical and horizontal sight distances are poor at the Brattle Street and Forest Street underpasses. Both streets are depressed under the right-of-way between granite bridge abutments located at a bend in the road.

Poor vertical sight distances also create a dangerous situation at the Park Avenue and Lowell Street railroad overpasses. North of the bridges, the two streets meet at a six-way intersection; a number of accidents have occurred on both of these streets.

Station Plans

If the Red Line is extended to Route 128, there would be approximately 2,840 inbound boardings per day at the Arlington Heights Station. If the Red Line terminates at Arlington Heights, there would be approximately 3,570 boardings per day at the station. Table VIII-9 shows estimated 1980 inbound boardings by mode of access under each alternative terminus.

Table VIII-9

ESTIMATED 1980 DAILY INBOUND BOARDINGS *
ARLINGTON HEIGHTS STATION

<u>Alternative Terminus</u>	<u>Mode of Access</u>				<u>Total</u>
	<u>Walk-In</u>	<u>Bus</u>	<u>Kiss-and-Ride</u>	<u>Park-and-Ride</u>	
Route 128	650	640	1,110	440	2,840
Arlington Heights	650	1,120	1,360	440	3,570

* Source: CTPS

With either alternative terminus, the Arlington Heights Station is intended to be an intermediate transit stop, linking Arlington and downtown Boston. Its location along Massachusetts Avenue near Park Avenue would be easily accessible by auto and by bus. The Arlington Heights Station would be designed to accommodate kiss-and-ride vehicles, simultaneous bus arrivals, and park-and-ride vehicles.

Table VIII-10 shows the expected peak-hour auto arrivals at the Arlington Heights Station by direction of approach on Massachusetts Avenue.

Table VIII-10

ESTIMATED 1980 PEAK-HOUR AUTO ARRIVALS *
ARLINGTON HEIGHTS STATION

(a) Access Route (D) and		<u>Mode of Access</u>		
<u>Alternative Terminus</u>		<u>Park-and-Ride</u>	<u>Kiss-and-Ride</u>	<u>Total</u>
<u>Massachusetts Avenue (E)</u>				
. Route 128		180	165	345
. Arlington Heights		175	210	385
<u>Massachusetts Avenue (W)</u>				
. Route 128		70	75	145
. Arlington Heights		90	110	200

(a)

(D) - Denotes direction from which arrival originates,
(i. e., (N) = from the North).

* Source: CTPS

Table VIII-11 shows the feeder bus requirements to satisfy the expected peak-period demands at the Arlington Heights Station. It also gives the 1977 existing bus supply and proposed bus strategy under which existing bus service has been modified to accommodate the Red Line Extension.

Table VIII-11

ESTIMATED PEAK-PERIOD FEEDER BUS REQUIREMENTS
AND SUPPLY STRATEGY
ARLINGTON HEIGHTS STATION*

Peak Period Bus Requirements

<u>Approach Direction</u>	<u>Existing 1977</u>	<u>Proposed</u>
North	49	24
South	5	12
TOTAL	54	36

Peak Period Bus Arrivals

<u>Access Route</u>	<u>Existing 1977</u>	<u>Proposed</u>
Massachusetts Avenue (E)	30	12
Massachusetts Avenue (W)	4	8
Park Avenue (S)		16
TOTAL	34	36

*Source: MBTA

Impacts

Elimination of at-grade railroad operations and implementation of the proposed depressed transit line would significantly improve traffic conditions at north-south street crossings along the railroad right-of-way. Grade crossings at Water Street and Mill Street, the sites of frequent accidents--often due to inadequate signalization of train movements--would be eliminated. Existing underpasses at Grove Street, Brattle Street and Forest Street would be replaced by overpasses, greatly improving sight distances at all three locations. Arlington's Director of Community Safety considers this a major benefit and also favors the proposed lowering of the Park Avenue and Lowell Street bridges which would occur in conjunction with depressed or tunnel/cut-and-cover transit development. The bridge lowering would improve sight lines for motorists as the bridges arch steeply over the partially depressed railroad track and obscure the view of intersections or driveways on the opposite side.

Based on CTPS estimates, parking demand at the Arlington Heights Station would vary according to the Red Line terminus. Allowing for parking turnover, and assuming that 350 parking spaces would be provided at Arlington Heights, there would be an excess park-and-ride demand. It is expected that the insufficient parking supply would cause a portion of this excess demand to divert to kiss-and-ride or feeder bus access modes; others would travel to the larger parking facility at the Alewife Station, since that garage is not expected to reach capacity as soon as the one at Arlington Heights. These diversions would offset a portion of the unsatisfied park-and-ride demand. Table VIII-12 shows the estimated excess park-and-ride demand; anticipated diversions to other access modes and to Alewife; and the resulting excess park-and-ride demand at Arlington Heights.

Table VIII-12

ESTIMATED 1980 EXCESS PARK-AND-RIDE DEMAND *
ARLINGTON HEIGHTS STATION

<u>Alternative Terminus</u>	<u>Unsatisfied Demand</u>	<u>Unsatisfied Demand Diverted To:</u>			<u>Excess Demand</u>
		<u>Kiss-Ride</u>	<u>Bus</u>	<u>Alewife</u>	
Route 128	590	90	90	30	380
Arlington Heights	1300	200	200	150	750

* Vehicles per day; Source: CTPS

With either alternative terminus, the Arlington Heights parking facility would be filled up prior to the end of the morning peak hour. The remaining excess park-and-ride demand (i. e., those not diverted to other access modes or to Alewife) would probably: 1) drive to the Arlington Heights Station and seek on-street parking in the vicinity of the station, thereby depleting the parking available for community residents; or 2) choose not to use the Red Line if sufficient parking is not available, and either continue the journey by automobile or not travel at all; this would reduce the portential benefits of the proposed extension.

A Red Line station at Arlington Heights would result in a slight decrease in daily and peak-hour traffic volumes due to the diversion of auto trips to transit; however, this would be offset by an increase in vehicular traffic attracted to the station. Table VIII-13 shows the estimated net change in traffic volume at the Arlington Heights station.

Table VIII-13

ESTIMATED 1980 NET CHANGE IN TRAFFIC VOLUME
ARLINGTON HEIGHTS STATION

<u>Alternative Terminus</u>	<u>Daily</u>	<u>Peak-Hour</u>
Route 128	+2, 500	+500
Arlington Heights	+3, 400	+600

During peak periods, traffic moves freely through the intersection of Park Avenue and Massachusetts Avenue (level of service A). With the addition of a transit station in Arlington Heights, traffic flow would be restricted during peak periods, resulting in congestion and delays (level of service D/E) unless intersection improvements are made. Park Avenue, north of the station, would also experience peak-period congestion, especially at the intersection with Lowell Street.

The large number of kiss-and-ride passengers during the peak hour would further contribute to traffic congestion in the station area. A small kiss-and-ride discharge area is planned on the north side of Massachusetts Avenue. As a result, double parking and standing may occur in the through lanes along Massachusetts Avenue, thereby constricting the roadway. This would be especially evident during the evening peak hour as kiss-and-ride vehicles line up along Massachusetts Avenue waiting for passengers.

Mitigating Measures

Geometric improvements to the Massachusetts Avenue-Park Avenue intersection--including implementation of separate left turn lanes and signals at the intersection and elimination of angle parking on the Park Avenue approaches--would minimize delays, decrease traffic congestion, and optimize traffic flow through the intersection. A proposed improvement plan is shown in Figure XI-8. These improvements would permit parking supply at the station to be increased without adversely affecting traffic at the intersection.

The provision of additional parking would maximize the transit extension ridership benefits and minimize the adverse effects of on-street parking. If 500 parking spaces are provided, the excess parking demand with a Route 128 terminal would be 300 vehicles per day and 550 vehicles per day with an Arlington Heights terminal. If only 350 spaces are provided, the excess demand would be 380 and 750 vehicles per day, respectively. Accommodating additional park-and-ride passengers would minimize the traffic movements associated with the search for on-street parking. Alternatively, strict local enforcement of parking regulations would serve to restrict the use of on-street parking spaces by transit riders.

It is estimated that minor intersection improvements, which would not require taking of property, could increase traffic capacity sufficiently to permit 175 additional parking spaces at the station and still maintain a stable traffic flow (level of service C) during peak hours. If some peak-hour congestion and delay (level of service D) would be acceptable, a total of 350 additional parking spaces could be provided. A 500 to 700-space garage at Arlington Heights would minimize the excess park-and-ride demand and the associated adverse effects.

The above analysis of the effects of increased garage capacity was conducted to ascertain the carrying capacity of the station area street network. It should be understood, however, that the proposed 350 space garage was considered to be an absolute maximum by the Arlington Heights Transportation Advisory Group in light of the excess mass of a larger facility, increased traffic congestion and air pollution, and lack of any data from the Lexington study. The Group also indicated that Level of Service D would be unacceptable at the Park Avenue Massachusetts Avenue intersection.

The congestion created by kiss-and-ride vehicles could be offset by providing a longer kiss-and-ride loading/unloading area. The discharge and pickup of kiss-and-ride passengers during peak hours could be facilitated off-street, thus minimizing traffic congestion in the station area.

During construction of the Arlington Heights Station, traffic would be disrupted on Massachusetts Avenue and Park Avenue. Detours via Paul Revere Road and Lowell Street could accommodate this traffic.

LAND USE

Existing Conditions

Existing land uses along the right-of-way from Arlington Center to Arlington Heights include industrial and residential development and open space. Most of the industrial areas lie south of the railroad, with the exception of New England Farms and Malcolm G. Stevens near the Center and the industrial buildings on Summer Street east of the Arlington High School athletic field.

West of New England Farms and north of the right-of-way is Fowle's Pond Field, a town-owned recreation facility. Property owned by the Adamian Construction and Development Corporation lies to the south. Development of the Adamian site in high-density housing has been proposed.

There are industrial buildings on both sides of the right-of-way at Mill Street. To the west is the Warren A. Peirce Field. Bleachers are located a few feet from the edge of the railroad right-of-way. On the north side of the tracks, Summer Street runs along the edge of the right-of-way at the east end of the field; residences are located near the west end, including an apartment complex at Grove Street. South of the tracks, on the east side of Grove Street is the Town Yard.

Between Grove and Brattle Streets much of the land is in residential use. A few small industrial buildings lie along the railroad near Dudley Street. Near Brattle Street on Brattle Drive is an apartment complex close to the railroad right-of-way. At Brattle Street, A. J. Gott, Inc., a contractor, occupies a building to the southeast and stores materials in a yard to the northeast next to the apartment complex. The contractor presently has plans to develop the yard for office use.

Public parklands are located north of the railroad from Brattle Street to Forest Street. There are a few residential structures along Washington Street. Parkland includes Hill's Hill, an unimproved area used for minibikes and go-carts; Buck Field, used by Little League teams; an MDC ice skating

rink; and the Summer Street Playground and Totlot. To the south are the MDC Pumping Station near Brattle Street, and residential uses including the Old Colony Apartments at Hobbs Court. Between Hobbs Court and Forest Street are industrial buildings including the Theodore Schwamb Mill. Land use is residential on both sides of the right-of-way between Forest Street and Mill Lane and industrial just west of Mill Lane. East of Lowell Street and south of the tracks, single-family residential structures predominate, while to the north there is a 57-unit apartment structure abutting the right-of-way. West of Lowell to Park Avenue, the Atlantic Roofing and Skylight Works occupy a large parcel to the south; commercial businesses occupy the buildings to the north.

The proposed site of the Arlington Heights Station is presently an MBTA bus terminal and storage yard. To the east there is commercial development along Massachusetts Avenue with the Arlington Coal and Lumber Company located between Mill Brook and the railroad. To the west is a large A&P Supermarket and parking lot; the north wall of the building is the property line of the railroad. There is additional commercial development on the south side of Massachusetts Avenue from Park Avenue to Paul Revere Road, and just south of the bus yard is a 92-space MBTA commuter parking lot currently used by bus riders. North of the Boston and Maine right-of-way, residential land uses consisting of one- and two-family homes occupy the area around Nourse Street and Lowell Street Place. Immediately north of the station site are the Colonial Village Apartments, an apartment complex with 144 units, and an old farm complex. The farm, at 176 Lowell Street, was one of the early farms in the Mill Brook Valley. Just west is Hurd Field, a town baseball field, and Drake Village. The latter is an apartment complex for the elderly and is presently being expanded by the Arlington Housing Authority.

Plans and Policies

Post Red Line development plans for the Arlington Heights area, discussed in the "Arlington Center-Mill Brook Valley Plan," call for the construction of an MBTA station at Arlington Heights according to a joint development concept, whereby ground floor commercial space would be incorporated with an arcade along Massachusetts Avenue. The Plan also recommends that the

amount of parking provided at the station be controlled by the carrying capacity of the street system; that provisions be made for adequate parking for commercial activities; and that measures be taken to alleviate parking problems experienced by local merchants if insufficient transit parking creates a large spillover onto streets. However, one of the Plan's objectives, listed under goals for development of rapid transit, is participation "in the Lexington-128 Red Line Study to consider an East Lexington station location as a possible alternative to Arlington Heights."

The Post Red Line Master Plan outlines in the final sections of the town's report includes the following changes for Arlington Heights:

- Signalization and turning movement improvements at the Park Avenue/Massachusetts Avenue intersection, with replacement of any parking taken by the improvements as part of the Red Line station development.
- Redevelopment of the Arlington Coal and Lumber Co. site, should business decline for any reason, either for integrating commercial activities with business activities on Massachusetts Avenue or for medium density housing. Mill Brook culvert capacity should be increased under Park Avenue.
- Possible rezoning of residential lots on the north side of Paul Revere Road, east of the MBTA commuter lot for business purposes. The rezoning, however, should be done in connection with the expansion of businesses on Massachusetts Avenue, and access to this area should be from Massachusetts Avenue only. A buffer should be provided to protect the residential properties on the south side of Paul Revere Road from any adverse impacts.
- Encouraging the redevelopment of land currently used for industrial and auto service activities north of the railroad right-of-way for medium density housing.

- Encouraging the development of a vista and a pedestrian connection from Massachusetts Avenue through to Hurd Field west of the Red Line station.
- Possible redevelopment of industrial land, currently used by the Atlantic Roofing and Skylight Works, for medium density housing if industrial uses decline in that area. Opening of Mill Brook and the acquisition of a scenic easement along its banks.
- Constructing a linear park over an underground Red Line alignment.

The Plan outlines the need for a linear park along the existing railroad right-of-way and for a pedestrian easement along Mill Brook for the Mid-Valley area between Arlington Center and Arlington Heights. An auto-oriented commercial center is proposed for a parcel between Hobbs Court and Ryder Street, at the Theodore Schwamb Mill. Three automobile dealers, presently located along Massachusetts Avenue in Arlington Center, would be relocated to this new center, thereby permitting development of a consolidated business district in Arlington Center. The rehabilitation of the Theodore Schwamb Mill building for related commercial use is included in this Plan as well as the opening up of the Mill Brook culvert by the mill and by the Old Colony Apartments.

The "Arlington Center-Mill Brook Valley Plan," in line with the policies of the Arlington Conservation Commission, stresses the need to improve the recreational characteristics of Mill Brook in the vicinity of the transit station. Acquisition of pedestrian easements along the brook at the Old Schwamb Mill (not to be confused with Theodore Schwamb Mill, located to the east) is also recommended.

The Conservation Commission's current policy is either to open up Mill Brook or not to preclude its opening in the future. The current president of the Arlington Conservation Association, a private civic group, indicated in an interview on February 5, 1975,

that it would oppose any Arlington Heights station plan which involves further culvertization of Mill Brook.

A June 1973 study prepared for the town by Peat, Marwick, Mitchell and Co. ("Economics and Market Analysis of the Potential for a Consolidated Business District", June 1973) analyzed existing shopping habits and market areas. The resultant development concept included establishment of a secondary commercial area in Arlington Heights "in order to achieve full realization of potential retail sales in the supermarket and convenience goods categories". It did not include any recommendation for development which would serve other than local patrons. Such development would be in conflict and competition with the concept of a consolidated business district in Arlington Center. The above mentioned elements of the "Arlington Center-Mill Brook Valley Plan" are in accord with the Peat, Marwick, Mitchell and Co. recommendations. Arlington Heights is to remain an area with a node of local commercial business at Massachusetts and Park Avenues.

The Board of Selectmen, as stated previously, has maintained that the Red Line Extension in Arlington be "underground" through the town and that it continue on to a terminus at Route 128. A particular concern of the Selectmen, other Arlington officials and TAG members, was that the Red Line not terminate in Arlington Heights. It was felt that an Arlington Heights terminus would alter the neighborhood character of the area. The report of the Selectmen's Advisory Committee on Transportation¹ cited community concern regarding the induced traffic at an Arlington Heights terminus in directing that the Red Line terminus should be connected to a major highway, i.e., Route 128.

1 "Status Report" of the Selectmen's Advisory Committee on Transportation to the Arlington Board of Selectmen, February 27, 1975.

The Board of Selectmen restated its position without substantive change on April 16, 1975. The preference for an "underground" alignment stems from the Board's concern that transit should not constitute a physical barrier, especially to park and residential areas abutting the alignment, nor increase noise levels in quiet neighborhoods.

Zoning

The zoning classification for the Arlington Heights station site was changed from industrial to a special "T" or transportation district. The entire MBTA Commuter railroad right-of-way within Arlington is in this zone. The MBTA lot south of Massachusetts Avenue in Arlington Heights, and the MBTA building on Water Street are also in the T zone. Land uses permitted in the T zone, as stated in the new zoning law, are "a railroad or rapid transit right-of-way, open space uses, or extension by air rights of uses in adjacent district." Allowable FAR is 0.35 for transit facilities; minimum front yard is 25 feet and maximum height is 2.5 stories or 35 feet. (See Figure VIII-1).

The portion of the station site is within the Inland Wetland District which was established by the recently adopted zoning bylaw. Within this zone, plans for new construction including any construction of transit stations and garages must be reviewed by the Inspector of Buildings, the Board of Health, the Arlington Conservation Commission, the Town Engineer, and the Arlington Redevelopment Board. A special permit must be issued before construction can begin.

The intersection of Park and Massachusetts Avenues is a B3 zone which includes parcels on all four corners. This zone is characterized as a Village Business District; allowable FAR is 1.4. Permitted intensity of commercial development decreases with increasing distance from this intersection. B2 zones--Neighborhood Business Districts with a small-scale business character--area located at Lowell Street and Massachusetts Avenue and at the site of the A&P store west of the existing MBTA bus yard. A B4 zone, now occupied by a service station is located at the corner of Paul Revere Road and Massachusetts Avenue. Allowable FAR for the B2 and B4 zones

is 1.0. In a B4 zone, apartment houses fronting on streets wider than 50 feet, and on lots larger than 20,000 square feet or more are permitted an FAR of 1.2.

Residential districts in the area are predominantly R2 zones, permitting two family homes. These districts include parcels along Paul Revere Road, Nourse Street and Lowell Street Place. The present site of the Colonial Village apartments is an R5 zone permitting two- to three-story garden apartments. The site of Drake Village, the housing complex for the elderly, is an R6 zone permitting apartments up to eight stories high. An R1 district encompasses the town-owned lands at Hurd Field and Arlington Reservoir and the residential area to the north along Lowell Street and Westminster Road.

Industrial land uses are permitted north of Mill Brook and south of the Boston and Maine right-of-way east of the MBTA yard and west of Lowell Street. A small area just north of the railroad right-of-way and west of Park Avenue is also in an industrial zone.

Impacts

Land Use

Land use changes directly resulting from the development of this segment of the Red Line Extension are: 1) use of the existing poorly maintained railroad right-of-way as a tunnel/cut-and-cover heavy rail transitway; and 2) use of the present MBTA bus yard as a transit station, parking garage and new open space. New open space would be created by placing the transit line in a tunnel adjacent to Arlington High School, land abutting the historic residential property west of Forest Street, and possibly the land adjacent to the Old Colony apartments.

Indirect effects of the transit extension to Arlington Heights would consist of increased pressures for development created by the desirability of locating residences--particularly apartments--and businesses in close proximity to a transit station. The full extent and nature of such changes would be controlled by town plans and zoning. Another indirect effect would be the possible closing of some industrial uses and redevelopment of such sites for residential use or, in one case, for the possible relocation of historic structures.

The various alternatives would include similar indirect changes in land use, except that the dual transit and freight operation alternative would reduce the likelihood of industrial closings. The no action alternative would involve no change to existing land uses.

Plans and Policies

Officials of the Town of Arlington have stated that the Town cannot adequately assess the alternatives for a Red Line Extension beyond Arlington Center at this point in time, since data is as yet unavailable from the transportation study now being undertaken by the MBTA in the Town of Lexington.

The proposed project--construction of a transit alignment in a tunnel/cut-and-cover section from Arlington Center to Arlington Heights--is in line with the Arlington Board of Selectmen's policy favoring an underground transit line through the town. The Arlington Board of Selectmen reaffirmed this policy in a statement issued October 14, 1976, which states, "Moved that the official position of the Board of Selectmen is that we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals, namely, that of an underground configuration, throughout the Town; that there will be no terminus in Arlington, temporary or permanent, and that it will ultimately extend to Route 128; further that although we will cooperate in any way to assist in developing the information, citizen input and plans to accomplish these and related goals and objectives, we rescind our support until the total package has been produced acceptable to the citizenry of this community. Said action is not to be construed as lack of support for the concept of mass transportation through the development of the Red Line."

The proposed project would permit development of a linear hiker-biker connection above the cut-and-cover tunnel. In accordance with the policies of the Arlington Conservation Commission, no additional culvertization would be introduced along Mill Brook. However, the brook would require relocation to improve hydraulic conditions. Preservation of the granite arch culvert opening for the brook, near Mill Street, would be included in the project.

Although this station location is referenced in the Town's Arlington Center-Mill Brook Valley Plan, the representatives of the Town of Arlington generally favor a station site in East Lexington.

The Arlington Heights station was located at the MBTA bus yard, rather than in East Lexington, primarily to minimize property taking and to serve an area of greater population density. Further study of the extension into Lexington will provide additional data which could have an impact on Arlington Heights station plans during the design phase. The recommended station plan was formulated as a line station to serve the Arlington Heights residential area, and not as a Red Line terminus. The Arlington Heights Task Force is not in agreement with the size of the proposed 350 car garage. The 350 car figure was construed as an absolute maximum by the Task Force for planning purposes only, since they were not in full agreement with the station location.

The dual transit and freight alternative would reduce the possibilities for formal development of a linear park in the combined railroad/transit right-of-way, thus limiting the implementation of the Plan recommendations. Pedestrians would most likely continue to walk along the freight tracks rather than to be confined to a narrow, intermittent path alongside the tracks. With a cut-and-cover station, the platform would be underground; consequently, the recommended project would be more responsive to town plans and policies than the at-grade station included in the alternatives. Cut-and-cover station construction would incorporate desired hydrological improvements to Mill Brook.

The no action alternative would not correspond to existing plans and policies to develop a linear park along the right-of-way, unless the freight tracks could be removed at some point in the future.

Zoning

The new T zone permits a maximum FAR of only 0.35. The proposed station would have to exceed this ratio in order to provide 325 parking spaces, bus loading/unloading facilities and a kiss-and-ride drop-off area. The height of the garage ramp and the stairwells connecting the circulation spine would exceed the 35-foot height limit. If the first level of the garage is not slightly depressed the height of the low, protective wall around the fourth level would also exceed height limitations in this zone. The garage ramp would extend into the 25-foot minimum front yard.

The dimensional and density regulations for the T district were drafted to limit and control possible non-transit development, as a "holding action", until a final determination could be made regarding the extension of the Red Line to Arlington. The Arlington Redevelopment Board and the Department of Planning and Community Development will formulate a series of changes to the zoning bylaw once Red Line construction has been assured; however, these changes must be adopted by the Town Meeting before they could be effected. Construction of the transit station and parking garage will also require a special permit as previously mentioned.

Property Taking

Property takings required for this section of the proposed transit extension include a portion of a parcel presently owned by A. J. Gott Inc., a plumbing contractor, and used for storage of equipment and supplies. The firm had planned to construct two buildings on this parcel; however, these plans were precluded by Arlington's building moratorium during the reassessment of the old zoning ordinance and the preparation of the recent bylaw. The parcel is presently zoned for industrial use and it is the only parcel classified as industrial on the north side of the right-of-way in the immediate area. There are no buildings on the affected portion of the property at this time. The site was formerly occupied by a railroad station and was sold after the station was demolished. This parcel was considered as a possible station site for a light rail vehicle alternative.

Hydraulic improvements required to prevent flooding at the Arlington Heights Station would necessitate the taking of a structure at 53A Park Avenue, currently occupied by Christopher's Modern Shoe Service, for a new culvert under Park Avenue. The shoe service operation would have to be relocated unless the brook is run in a culvert beneath the structure. The shoe service could possibly be temporarily relocated and later, be permanently relocated in a portion of the commercial space developed within the station.

Hydrological improvements to minimize flood hazards to the station would also require the taking of 14 parking spaces at Colonial Village Apartments. Due to inefficient layout of the existing paved lot, it could be replanned to replace these spaces without requiring additional parking lot area. When the apartment complex's parking lot was constructed it did meet existing requirements for number of spaces per parking unit. However,

according to present town standards, the apartment complex does not have an adequate number of parking spaces per unit. Nevertheless, the close proximity of the parking lot to the proposed transit facility as well as increased energy costs should reduce the impact of the need for additional parking spaces over the long-term.

The latter two takings would only be required regardless of either at-grade or cut-and-cover station construction in Arlington Heights. No takings would be required for the no build option.

Commercial Activities

Hydrological improvements required with construction of the cut-and-cover transit station would necessitate the taking of 53A Park Avenue and thus negatively impact Christopher's Modern Shoe Service. However, the positive impact on Mill Brook and its future potential as a linear park would balance the negative effect of this taking. In order to improve the brook and to achieve the long-term goal of a linear park along Mill Brook, the building at 53A Park Avenue would have to be demolished and the brook relocated in an open channel to Park Avenue. Relocating this business prior to the opening of the transit station would present a problem if suitable vacant store frontage is not available in Arlington Heights at that time. Since a shoe service business generally builds up a local clientele over time, its relocation to Arlington Center could result in a loss of customers as well as exposure to competition from similar business already located in Arlington Heights.

Once the Red Line station is opened, the shoe service and other Arlington Heights businesses would benefit from their location near the station and from the convenient access afforded transit users. Those businesses within walking distance from the station would attract new customers who do not reside in the neighborhood. Expansion of existing commercial activities as well as introduction of new businesses would occur. Such development would have to be carefully controlled by zoning, however, to maintain the character of the area.

Urban Design

The proposed project, creating an underground transit line through the western half of Arlington via the right-of-way of the Lexington Branch railroad, would be compatible with surrounding development.

The proposed station would be in scale with existing Massachusetts Avenue street frontage. New open space at the east end of the station site would provide a window opening onto Mill Brook.

Joint Development

Joint development of a linear park in conjunction with the alignment from Arlington Center to Arlington Heights could be undertaken with the Town of Arlington. The basic facility, as indicated in the description of the proposed project, grading and planting of grass should be assumed by transit development. Any additional improvement such as park furniture, special landscaping, lighting and bikeways development should be proposed as part of a town plan for the linear park prepared in coordination with the MBTA.

The cost of the grading and seeding would be part of transit development. Any additional optional decking, installation of park furniture, lighting, pathways and play equipment should be funded by the town or by State and Federal recreation capital improvement programs. Maintenance of the facility should be the responsibility of the town, unless it is assumed by a regional agency such as the MDC.

Joint development potential in conjunction with future medium and high density housing construction on parcels abutting the right-of-way also exists. The Adamian property on Mill Street which includes the historic granite arch culvert opening on Mill Brook would be one example. Park development above the transit line near Mill Street could be planned and constructed in a manner which related it directly to the proposed housing complex.

No joint commercial development is included in the proposed Arlington Heights Station plan. This reflects the concern of TAG members that commercial businesses within the station would compete with existing local business, and that with the inclusion of such businesses, the station would not be one station

along the Red Line, but more like a terminus. Joint development of open space, particularly to the east of the station and adjacent to Mill Brook would be undertaken in coordination with the Town of Arlington.

The parcel to the south of Massachusetts Avenue, the MBTA parking lot, should be examined as a site for local commercial parking in a joint development planning study.

Mitigation Measures

Noise and visual impacts of the proposed action would be eliminated by the underground nature of the project. As in East Arlington the right-of-way would be graded and seeded for development by the Town as parkland. The triangular parcel of land which constitutes part of the railroad right-of-way on Frazer Road could become a part of such a park.

Street crossings include roadway reconstruction at Drake Road, Park Avenue, Lowell Street, Forest Street, Brattle Street, Grove Street, Mill Street and Water Street.

Various measures to minimize environmental impacts in the immediate station area have been incorporated into the station plan. The height of the garage would be kept to a minimum. Mill Brook would be rerouted in an open configuration north and east of the station. A north-south pedestrian access through the station site would be provided. New open space is proposed at the east end of the station site. Hydrological improvements to Mill Brook would decrease flooding downstream, particularly at Arlington Coal and Lumber Yard and at the end of Nourse Street and Lowell Street Place.

The final station design should be in harmony with existing structures in Arlington Heights.

NEIGHBORHOOD AND COMMUNITY FACTORS

Existing Conditions

The principal community concerns along this segment of the Red Line are: the maintenance of the neighborhood character of Arlington Heights, and the design of the Red Line right-of-way to permit a safe, linear pedestrian connection from Arlington Center to Arlington Heights.

The Arlington Heights area is characterized by older two-and three-story commercial structures clustered at the Massachusetts and Park Avenue intersection. Homes in the area are largely one-and two-family frame buildings constructed more than 30 years ago. A number of historic structures including the main building at Arlington Coal and Lumber Co. and the Old Schwamb Mill are also present in the area. The MBTA bus yard and commuter parking lot which have extensive areas of at-grade pavement, and the industrial uses north and west of the railroad at Park Avenue visually disrupt the neighborhood character which exists in Arlington Heights.

Topography contributes to the character of the area. Arlington Heights is located in a very narrow portion of the Mill Brook Valley; residences line the hills to the north and south. Only a limited amount of level land was available for commercial and industrial development. The area was not suited to become a focus of regional importance and, residents believe that it should never attain that status.

Population

The 1970 census indicated that approximately 1,700 people lived within one-fourth mile of the proposed station site and nearly 4,200 additional persons resided between one-fourth and one-half mile of the proposed site. Of the 5,900 persons residing within one-half mile of the site, nearly 17 percent were over 65 years of age and 20 or less than one percent were minorities. This percentage, higher than the 14 percent average for the entire town, reflects the number of residents at the Drake Village housing project for the elderly, located just west of Hurd Field.

The western portion of Arlington is generally less densely developed than the eastern part. Lots are larger and single-family homes are more predominant. Over 53 percent of the dwelling units within the one-half mile radius were owner-occupied; most of these units are comprised of six rooms. In 1970, the average home value within one-half mile of the station was \$25,700. Significantly higher home values were found in the tract east of Park Avenue than in the area to the west and lots tended to be larger in the former area. More than 43 percent of all units were single-family dwellings. Only 211 of the approximately 1,900 housing units within one-half mile of the station site were located in structures of ten or more units; this is about half of the relative proportion found around the

Arlington Center Station. Average rental within the one-half mile radius was about \$140/month. Year round housing vacancy rates for the Arlington Heights area are slightly lower than for the town as a whole.

About 60 percent of the households moved into their homes before 1964. Between 1968 and 1970, 22 percent of all households west of Park Avenue moved in and 26 percent of those east of Park Avenue moved into their homes.

Just under five percent of the families living in the tract west of Park Avenue had incomes below the poverty level. The corresponding figure for the tract east of Park Avenue was just under three percent. Automobile ownership in the area was high. In 1970, only 11 percent of the households in the two tracts did not own automobiles and about 30 percent of the total households owned two or more cars. More than 60 percent of the persons employed in the area drove their cars to work and just under ten percent were passengers in other cars. Slightly under 20 percent took a bus to work. Work trips outside Middlesex County were oriented largely to Cambridge (20-22 percent) and to Boston (21-23 percent), with six percent of work trips being to the Boston central business district.

Industry and Employment

Most industries in Arlington are located west of Arlington Center along the MBTA Commuter Rail Lexington Branch right-of-way. Industrial employment trends were analyzed in a report on the Arlington economy, prepared by the Arlington Redevelopment Board in 1972 as part of the Town's Comprehensive Plan. At that time, the construction industry was found to be stable and not affected by the building moratorium and the economic downturn. Manufacturing took a downturn between 1968 and 1970, both in terms of number of firms and number of employees. In 1970, 34 manufacturing firms employed 410 persons while 95 construction firms employed 641 persons. During the study, it was found that 36 percent of the manufacturing sector's employment was provided by the lumber and wood products industries, 11 percent from the printing industries, and 23 percent from metal products firms. The remaining 30 percent was included in the leather goods, chemical products, drugs, wire products, newspapers, engraving and electrical component firms. The report stated that "Arlington's geographic location does not bode well for future expansion of manufacturing industries and the

industrial base, if it does, in fact, continue to expand at all, will probably continue in the service sector, placing greater emphasis on the service industry rather than on manufacturing. "

Existing industries along the alignment from Arlington Center to Arlington Heights which rely heavily on freight service are: Malcolm G. Stevens Company and Larsons Terminal. New England Farms was vacated in 1976, but formerly relied heavily on freight service.

Malcolm G. Stevens is located at 78 Summer Street. This firm as documented by the BTPR (Page III-73) deals in wholesale cast metal products such as picture frames and employs about ten people. Two or three carloads of bulk supplies are received per week.

Larson Terminal, at 30 Mill Lane, is a wholesale lumber distributor. The firm employs an average of eight to ten persons; however, in the spring of 1975 only seven persons were employed. Eighty percent of the transactions of this business are dependent on rail access, according to one of the owners. The firm is the major supplier to the Arlington Coal and Lumber Co. located at 41 Park Avenue.

Other firms which receive shipments by rail but which indicate they could survive termination of freight service are: Atlantic Roofing and Skylight Works at 30 Park Avenue, a distributor of siding and roofing materials which receives three cars of insulation per year; Brigham's Ice Cream Plant at 30 Mill Street, which presently receives only two carloads of strawberries per year and also normally receives approximately 25 carloads of liquid sugar (these shipments were suspended at the time of the interview due to sugar price fluctuations); and Arlington Coal and Lumber Company which receives one car of pines and plywoods per week and from 40 to 100 cars of dimensioned lumber per year.

Pedestrian Circulation

The neighborhoods north and south of the Lexington Branch Railroad right-of-way are tied together for a number of reasons. Commercial businesses in the area such as supermarkets and drugstores are all located along Massachusetts Avenue south of the right-of-way. Thus, residents north of the right-of-way must traverse it to reach these businesses. The principal recreational facilities in the western portion of Arlington, aside from the high school athletic field, are located to the north of the railroad. These include: Hill's Hill, Buck Field, the MDC ice skating rink, Summer Street Playground and Totlot, and Hurd Field. The major medical facility, Symmes Hospital, is also north of the railroad. Due to the location of these activity centers, a great deal of pedestrian traffic is generated across and along the existing railroad tracks.

Students at Arlington High School use the MBTA Commuter Railroad right-of-way as a pedestrian link to their homes in the western portion of the town. The railroad property, according to the Arlington Superintendent of Parks and Recreation, is used extensively by bicycle and mini-bike riders. He also said that he had received in the past a number of complaints from the Railroad regarding youngsters throwing rocks at passing trains from abutting playgrounds or from bridges. Major pedestrian crossing points in the western part of Arlington are located at the high school, Ryder Street, Frazer Road, Hurd Field, and at the Old Colony Apartments.

From Drake Village running westward, the railroad right-of-way forms a continuous pedestrian and bicycle link to the Arlington Reservoir and the Great Meadows, a wetland area owned by the Town of Arlington, but located within the boundaries of the Town of Lexington. Field inspection and interviews indicated that this route receives significant use. Recreational development of portions of the Great Meadows for picnic sites, day camp and education facilities and a limited area for sports were proposed in the 1972 "Arlington Open Space Study." Access in the recommended plans for bikers and hikers, however, was via a pathway following Mill Brook, rather than along the railroad right-of-way.

Secondary school service areas reinforce the cross-railroad pedestrian activity. Ottoson Junior High School, serving the western portion of Arlington, is located south of the tracks. Students from the hills to the north must cross the railroad to gain access and a high proportion of them, as indicated by the Parks and Recreation Superintendent and a representative of the public schools, cross the railroad at the end of Ryder Street near the MDC ice rink. This is primarily due to the topography and street configuration of the area.

The service area boundary between the Locke and Pierce Elementary Schools in Arlington Heights is the railroad right-of-way; however, the northern boundary of the Cutter Elementary School service area is Summer Street. The Brattle Street underpass provides the only sidewalk pedestrian crossing of the right-of-way for students living north of the tracks. This underpass has been noted as dangerous by the Department of Community Safety because sight lines, both vertical and horizontal, are poor. The two parochial schools, St. Agnes and St. James, and the Ottoson Junior High School use the Summer Street Playground and Totlot for school athletic activities. These students generally use the Ryder Street crossing for access when walking to the field.

Parking

Parking supply in Arlington Heights is currently adequate except for two sectors on opposite sides of Massachusetts Avenue, immediately west of Park Avenue. A parking usage survey conducted by the Department of Planning and Community Development in the spring of 1975 confirmed that this was the greatest problem area, having a total deficit of 31 spaces. The "Arlington Center-Mill Brook Valley Plan" reported, "Like the Center, most parking in the Heights is short-term. Since there are no meters to encourage turn-over of onstreet spaces, thorough patrolling is necessary to keep long-term parkers off the street. In addition to employees who park in front of stores, the Heights has the added potential problem of apartments over stores. Even though residents of these units generally have parking available behind the stores, some may park in front for periods during the day, thus occupying spaces which are needed by the merchants."

In the parking survey the Arlington Heights area was found to have an overall parking supply surplus of 231 spaces; however, computation of parking demand did not include transit parking. A usage survey was taken to determine how much of the Arlington Heights parking is used by commuters. It was found that most commuters used the MBTA lot on the south side of Massachusetts Avenue and, except for the area in front of the MBTA lot and the bus yard, very few park on the street. Most of the commuters were from Lexington (38 percent) and Arlington (26 percent); another ten percent were from Bedford.

Current daytime non-residential parking supply is 363 off-street spaces and 180 on-street spaces for a total of 543 spaces. This includes 92 spaces in the MBTA lot, and 53 spaces in the Taylor Rental Parking lot on the north side of Massachusetts Avenue east of Park Avenue.

Public Safety

A recurrent problem has been created by children who throw stones at trains from abutting recreation areas. Another problem occurs at points in Arlington Heights where the railroad passes under bridges and it is easy to drop things onto the trains or tracks. In the past, shopping carts, tires, milk crates and other items have been placed on the tracks along the unfenced right-of-way.

Vandalism has become more of a problem in recent years. The town, at this point, has not had any significant problems related to tampering with parking meters, but damage to vehicles by vandals is increasing. Purse snatching also occurs far more frequently than in the past. Due to the fact that most of the victims are elderly and that there are a large number of elderly persons in the town, personal security has become a significant community issue.

Impacts

Housing / Mobility

No housing units would be displaced by the Arlington Center to Arlington Heights line segment and station.

As with the previous segment, construction of a Tunnel/Cut-and-Cover with linear park joint development above the alignment, would be highly conducive to increased rental values in the vicinity of the park. Units in close proximity to Arlington Heights Station, particularly those within easy walking distance, would increase in value.

With the dual transit and freight service alternative, park development would not induce major increases in housing desirability, but proximity to the station would be a position factor similar to the proposed project.

Construction of transit at-grade could have a negative effect on the desirability of units immediately adjacent to the right-of-way unless proper visual and noise barriers are introduced.

The no build alternative would not alter existing conditions; pressure for the development of additional housing units would be minimal.

Property Values and Taxes

Certain localized effects on property values in the immediate vicinity of the station and the alignment would result from the construction process. Effects which would be due to a particular alignment cross-section, would be an indirect result of impacts to existing esthetics, noise and vibration, and/or pedestrian access. Removal of the existing at-grade freight line and replacing it with the proposed transit profile in this section should not cause significant negative impact to property values as long as appropriate measures are employed to mitigate against the above impacts. If the town undertakes joint development of a linear park, as mentioned above, close proximity of homes to the alignment would become an asset. A completely underground transit line would have a greater positive impact on property values, especially in conjunction with park development.

Close proximity to the Arlington Heights station would also become an asset, making homes and apartments more desirable. The value of commercial properties in Arlington Heights, as a result of increased patronage from transit riders, would also be increased.

The at-grade alternative could lower the value of properties abutting the right-of-way unless it is accompanied by visual and noise barriers, extensive landscaping and a special roadbed. The dual transit and freight service alternative would leave conditions relatively unchanged, however, slightly improved property values could occur if the remainder of the right-of-way were landscaped and utilized for a linear park. The no build option would not alter current trends.

Industry and Employment

Any transit development which requires discontinuation of freight service would have an adverse impact on existing industrial

employment in the Town of Arlington. Two firms, employing a total of about 20 persons, could be forced to relocate because of their dependence on the railroad: Larson Terminal and Malcolm G. Stevens Company. No portion of the parcels on which these firms are located would actually be taken for the Red Line right-of-way. The firms may not qualify for Federal or State relocation benefits unless they are actually acquired.

Other freight users could maintain their operations at some additional cost. Arlington Coal and Lumber Co. would buy from a distributor other than Larson Terminal, and Brigham's Ice Cream Plant would receive liquid sugar shipments by truck rather than by rail; however, the Arlington Coal and Lumber Co. would be the most vulnerable to adverse impacts.

The dual transit and freight alternative and the no build option would permit continuation of freight service, and therefore, these businesses would not be faced with possible relocation in order to maintain profitable operations.

P e d e s t r i a n C i r c u l a t i o n

The proposed project would have a positive impact on pedestrian access between neighborhoods north and south of the Boston and Maine by removing the existing railroad embankment, which is now a physical barrier. The proposed linear park to be developed in conjunction with the transit line would provide a pedestrian and bicycle connection between Arlington Center and Arlington Heights, linking the major recreation facilities which abut the right-of-way: Fowles Pond Field, the Arlington High School athletic field, known as Warren A. Peirce Field, Hill's Hill, Buck Field, the MDC ice skating rink, Summer Street Playground and Totlot and Hurd Field. Such a link would be of great benefit to the town and potentially to the region as part of a linear system linking Alewife Brook and the Great Meadows.

The entire right-of-way above the tunnel would have the benefit of providing a linear park along the entire railroad right-of-way. The right-of-way would no longer constitute a barrier between neighborhoods. The embankment would be removed and both east-west and north-south residential areas would be directly linked.

Any depressed alternative without any covering or pedestrian overpasses would create more of a barrier to pedestrian activity in a north-south direction than the railroad embankment does at the present time. Walls, fences or landscaping could create a visual buffer between neighbors to the north and south similar to what now exists where there is an embankment.

The at-grade alternative would have a major negative impact on pedestrian circulation and neighborhood cohesion all along this segment of the Red Line Extension. It would bisect the Arlington Heights area and the Mid-Valley. The line would be both a psychological as well as a physical barrier to communications across the right-of-way. Construction of underpasses or overpasses at Ryder Street and Arlington High School to mitigate this impact would not remove the psychological barrier effect.

Parking

The proposed garage at Arlington Heights Station would not be large enough to satisfy projected commuter parking demand. Competition for long-term parking spaces would create a parking problem for residents and employees of local businesses. Provisions for local commercial parking in the old MBTA lot, on the south side of Massachusetts Avenue, with particular emphasis on serving local employees, could alleviate this problem. An effective enforcement mechanism would be necessary. Use of eight-hour meters, as suggested in the previous chapter, is one possibility, however, it may become necessary for the town to hire additional personnel to enforce parking regulations. A tow-away service contract could be negotiated by the Town. Parking restrictions should be prominently posted and strictly enforced.

Public Safety

Joint development of a linear park above the transit line would create a pedestrian thoroughfare connecting major activity centers in Arlington. The linear park would be crossed by a minimum number of streets, maximizing the safety of park users. Crossings would be safer due to improved lines of sight.

The station would be designed so that the attendant would be located in the mezzanine level in a position to see along the circulation spine and also to view a major portion of the platform.

The at-grade alternative would be vulnerable to thrown objects and would require a high solid barrier, with the upper part curved away from the transit right-of-way, to deter vandals. Such a barrier, however, would cut off the riders' view and hinder rapid emergency existing from the transit vehicles. Existing unsafe bridge abutments at Grove, Brattle and Forest Streets would be maintained with this alternative as well as with the dual transit and freight service alternative.

Mitigating Measures

Mitigating Measures are discussed in the section on Land Use of this Chapter.

PARKS, RECREATION AND HISTORIC RESOURCES

This section presents detailed information about the public parks, recreational facilities and historic structures which are potentially affected by the Red Line Extension. This information, furnished in accordance with the requirements of the Section 4(f) review process, will include, where pertinent and available, the following data:

- size and location
- type of resource
- available activities and facilities
- usage, patronage and access
- relationship to similar community resources and consistency with goals or plans
- ownership, title clauses, and other jurisdictional elements.

Potential project-related impacts to each resource and the measures and coordination of efforts to minimize the potential adverse effects are presented.

Existing Parks and Recreation Facilities

Seven public parks and recreational facilities in northwestern Arlington lie within the study corridor:

Fowles Pond Field

Warren A. Peirce Field

Hill's Hill

Buck Field

MDC Ice Skating Rink

Summer Street Playground and Totlot

Hurd Field

An itemized description of each of these resources follows.

Fowles Pond Field

Fowles Pond Field, or Buzzel Field, is a 3.5-acre recreational park one-quarter mile west of Arlington Center. It is bounded by Summer Street (north) and the Lexington Branch railroad tracks (south) between Mill Street and Catholic Archdiocese Football Field.

Activities at the field include softball, youth baseball and football, soccer and supervised summer recreation. In addition to the ball diamonds and football field, Fowles Pond Field has two black-topped tennis courts and a baseball court. A small area of the field is provided with children's play apparatus.

Fowles Pond Field serves Arlington residents from a large recreation district, generally within a half-mile radius of the field.

The predominant users are children, whose activities include Little League baseball, Pop Warner and elementary school football, and other less organized recreational activities. The area is also used by girls' softball leagues, adult tennis, and to some extent, by Arlington Catholic High School. Vehicular access is poor, partly because of inadequate identification. Although no parking is available along the Summer Street boundary, limited parking is provided in the private lot of the Malcolm G. Stevens Company, located on the corner of Mill and Summer Streets. Pedestrian access is via the Lexington Branch right-of-way and via walks along the side streets.

Since Fowles Pond Field abuts the Lexington Branch railroad tracks, it is included in the linear park concept which would link the open spaces and recreational resources between Spy Pond and the Arlington Reservoir. This park concept has been discussed in Appendix F as well as in this chapter under Land Use.

The Field is owned by the Town of Arlington and is under the jurisdiction of the Parks and Recreation Department. A letter from the Chairman of the Town Park Commission was received February 6, 1976, stating that the field is of local significance.

Warren A. Peirce Field

The Warren Peirce Field is an 8.9-acre recreational field adjacent to the Arlington High School. It is bounded by the Lexington Branch right-of-way and the high school between Grove and Mill Streets.

A quarter-mile cinder track, football field and bleachers, a regulation-size baseball diamond and a softball diamond are provided at the field and serve a broad range of activities. The major user of the field is the high school, particularly the athletic department and the physical education classes. Other schools which do not have space or bleacher facilities, also use the field during the school year. In the summer, the field is used for track meets, Little League baseball, girls' softball and similar activities.

Similar field activities are available to the east at Fowles Pond Field and to the west at the Summer Street Playground area. These facilities, however, are used by younger age groups and are neighborhood oriented. Warren A. Peirce Field is a major recreation facility for the Town of Arlington, particularly because of its proximity to the high school and its bleacher facilities for spectator sports. Access to the field is fair; auto access is via Mill Brook Drive (with parking available around the high school) and pedestrian access is along the Lexington Branch right-of-way.

Like the other open space lands abutting the railroad tracks, the Warren A. Peirce Field would become one of the links in the linear park concept.

Warren A. Peirce Field is owned by the Town of Arlington and although adjacent to and predominantly used by the High School, it is controlled and maintained by the Parks and Recreation Department. A letter from the Chairman of the Arlington Park Commissioners was received February 6, 1976, indicating that the field is of local significance.

Hill's Hill

Hill's Hill is a 4.5-acre recreational park midway between Arlington Center and Arlington Heights. Its boundaries are formed by Summer Street, Washington Street, the Lexington Branch right-of-way and Buck Field (at King Street).

Most of the area is for passive recreational uses with grass and some large trees. Both the eastern and the western edges of the park have been furnished with children's play equipment and during the summer the area is mainly used as a totlot. Picnicking is also enjoyed at the park. In winter the park is used for sledding and other snow activities.

Users of Hill's Hill are mainly from the surrounding neighborhoods. Nearby Buck Field and the Summer Street Playground have similar facilities but also have large playing fields. These recreationally oriented open spaces, like others abutting the railroad right-of-way, are important to the linear park concept.

Hill's Hill is owned by the Town of Arlington and is under the jurisdiction of the Parks and Recreation Department. Its local significance was documented in a letter received from the Chairman of the Park Commissioners, February 6, 1976.

Buck Field

Buck Field is a recreational park, approximately four acres in size, bounded by Summer Street, Hill's Hill (at King Street), the Lexington Branch right-of-way and the MDC ice skating rink on Ryder Street.

Facilities include a blacktopped basketball court and a fenced baseball diamond used mainly by the Little League. Other unorganized sports take place throughout the year. Access to the area is fair--via Summer Street or Ryder Street for automobiles and along the railroad right-of-way for pedestirans.

Buck Field is owned by the Town of Arlington and is under the jurisdiction of the Park Commission, who declared the field significant in a letter dated February 6, 1976, and signed by the Chairman of the Commissioners.

MDC Skating Rink

The MDC Ice Skating Rink, located adjacent to the Bedford Division right-of-way between Buck Field and the Summer Street Playground, is an indoor recreational ice rink. The facility is used for recreational free skating as well as hockey games for neighborhood leagues. Access to the rink is via Forest and Ryder Streets from Massachusetts Avenue to the south and via Summer Street to the north. Some vehicular parking is available around the rink building.

The rink is owned and operated by the Metropolitan District Commission.

Summer Street Playground

The Summer Street Playground, a 5.5-acre recreational park, is bounded by Forest, Summer and Ryder Streets and the Lexington Branch right-of-way. It is the largest facility in a block of recreationally-oriented open space along the railroad right-of-way and Summer Street, midway between Arlington Center and Arlington Heights.

Major activities at the playground are field sports, including baseball, softball, football, volleyball, soccer, and field hockey. A lighted, asphalt basketball court and a baseball diamond are the major facilities but the large, open grass-covered field is used for a wide variety of recreational purposes. The area is used intensively by organized youth groups such as the Arlington Youth Association, Arlington Catholic High School (athletics), Arlington High School freshmen teams, and for area junior high and elementary school athletic activities. It is also an important family outdoor recreation area, with picnic tables, timber-form totlot play equipment and a spray pool.

Auto access is fair, via Summer, Forest or Ryder Streets with some parking spaces available off Ryder Street by the MDC ice skating rink. Pedestrian access is important because of the youth orientation of the area. Many young people currently ride the Massachusetts Avenue bus to Forest Street and then follow Ryder Street over the at-grade railroad tracks. The railroad right-of-way is an important informal link to the Arlington High School grounds to the east and to the Arlington Heights area.

Summer Street Playground is owned by the Town of Arlington and is under the jurisdiction of the Park Commission. The park was declared locally significant in a letter received from the Chairman of the Park Commissioners, dated February 6, 1976.

The three parks forming the large block of open space along Summer Street--Hill's Hill, Buck Field, and the Summer Street Playground--were originally part of a farm. Although obtained at different times, they have been under town ownership for a long time, during which the Park Department has continuously upgraded the available facilities. In 1974, the Town spent \$65,000 plus additional Federal money to further improve the area.

Hurd Field

Hurd Field, or the Arlington Reservoir Field, is a 4.5-acre recreational park in Arlington Heights. It is bounded by Mill Brook and the Arlington Reservoir to the north, the Colonial Village Apartments to the east, the Lexington Branch railroad right-of-way and the Drake Village elderly housing complex.

The sodded field is used for junior high school girls' and women's softball, Little League baseball, flag football and girls' soccer. Since it is a lighted facility, it is used for junior high and high school football at night.

Access to the field is poor. A small parking area is adjacent to the field, off Drake Road, but many people park in the A&P supermarket lot on Massachusetts Avenue and walk to the field on a path which crosses the railroad tracks.

As part of the linear park concept, Hurd Field would be linked to other recreational resources. At present, it is poorly related to the Arlington Reservoir which is across Mill Brook. The linear park plan would improve this relationship and furnish a more diverse, family-oriented recreation facility in Arlington Heights that would serve the entire town.

Hurd Field is owned by the Town of Arlington and under the jurisdiction of the Park Commission. It was declared locally significant by the Chairman of the Park Commissioners in a letter dated February 6, 1976.

Impacts

No publicly-owned parkland would be taken for the proposed project or any of the alternatives. The project, with the proposed linear park connection would make access to parks safer, easier and more pleasant. The underground transit line running adjacent to parks south of Summer Street would introduce intermittent vibration in those areas where the centerline of the track is not within 100 feet of a dwelling and has therefore not been proposed for treatment. The Arlington Redevelopment Board, at a meeting on August 11, 1975, said that they felt it is important to provide track treatment along the edge of the Summer Street parks. To the extent that such treatment is not provided a negative impact to local policy would exist.

Existing Historic Resources

Thirteen structures of historic significance have been identified within this section of the project corridor. In a survey prepared for the Mill Brook Valley Study by the Arlington Historical Commission, the historical structures were classified in four categories according to their relative historic value. Through discussions with Mrs. Marjorie Cohn, secretary of the Historical Commission, this rating system was extended to the other structures in this segment. The four categories include: Primary Importance--those structures considered to be of striking historic value, both locally and nationally, including those listed on the National Register of Historic Places; Important--those structures only slightly less important or somehow altered from their original significance; Moderately Important--those structures of value locally as representative of a certain architectural style or early period; and Mentionable--those structures of only local interest as examples of fairly common early architectural styles or which have been greatly altered from their original condition.

The following is a list of these historic resources:

1. 10 Grove Street Place. This Victorian dwelling was built before the turn of the century and is best noted for the detail in its porch. It is rated as Mentionable.
2. 67 Dudley Street. This Greek revival cottage, built before 1850, has been altered by a porch addition over its entire facade. It is classified as Mentionable.
3. Railroad abutments, Brattle Street crossing. Granite retaining walls and steps were built here at the turn of the century when the railroad was regraded, creating the Brattle Street underpass. The stone blocks were laid with excellent workmanship. A Mentionable rating has been given to the abutments.
4. 7 Brattle Court. This Victorian residence, rated as Mentionable, was built in the third quarter of the 19th century.
5. Brattle Court Water Pumping Station. This secluded building, now owned by the MDC, is located south of the MBTA Lexington Branch right-of-way and west of Brattle Street. Constructed in 1907 from MDC engineering plans, it displays renaissance revival architectural style and is considered one of the handsomest public buildings in Arlington. Its historic value is rated Important.

6. 7 Frazer Road. This federal style home, built in the early 1800's, was constructed over the remains of an earlier, larger stone foundation, probably associated with pre-Revolutionary War farm. Its Mentionable rating is more for the historical significance of the old foundations than for the dwelling itself.
7. 18 Frazer Road. This is a handsome Victorian farmhouse built around 1870. It is well preserved and is rated Moderately Important.
8. 78 Bow Street. This Victorian factory, built in 1883, is still in operation. Production, in addition to its original function for textile finishing, includes graphic arts and bookbinding. The masonry stays and window patterns are noteworthy. It is ranked as Important.
9. 17 Mill Lane. The Old Schwamb Mill, built in 1861, was the last operating mill on Mill Brook and the oldest picture frame factory in the nation. The central building is now owned by a non-profit organization which maintains the mill and continues to manufacture frames as a museum. The mill is on the National Register of Historic Places and is rated of Primary Importance.
10. 61 Lowell Street. This Victorian residence was built around 1860 and was the first dwelling in the area. It is fairly well preserved and has received a Moderately Important rating.
11. 90 Lowell Street. This Victorian dwelling was built in the late 1800's and is surrounded by an old orchard and fieldstone walls. However, the house and site are deteriorated and the house is only rated Mentionable, primarily because it is an example of a once common living style.
12. 41 Park Avenue (Arlington Coal and Lumber Co.). This structure is a remarkable example of the Victorian mode of the gothic revival style, probably the best in Arlington. It was built around 1875. The first floor has always been used for commercial business, but the second floor auditorium was once an important meeting

hall for a variety of activities. These combined business/civic buildings were once fairly common in Arlington. This remains an excellent, well preserved example and has a Primary Importance rating.

13. 176 Lowell Street. A fine Victorian house, barn and outbuildings, constructed during the late 1800's, are the remnants of a market-garden farm. They have retained the naturalness of the pastoral setting amid the urban environment and are considered of Primary Importance as an historic resource.

Impacts

None of the aforementioned buildings would be taken for construction of the Red Line Extension. Those which are very close to the centerline of the track, especially between stations where trains are travelling at high speeds, could experience some perceivable vibration without special treatment of the transit trackbed. Presently these structures experience extreme noise and vibration impacts resulting from intermittent passings of freight and commuter trains on the poorly maintained railroad roadbed. This condition, which can cause significant damage to the mortar and plaster of older buildings, would be eliminated.

The Brattle Street railroad abutments would be removed along with the embankment with construction of this portion of the Red Line. The granite stone which makes up the abutments will be saved and be reused as prescribed by the Arlington Historical Commission. Brattle Street would run over the underground transit line and existing unsafe vehicular sight lines would be eliminated.

The Arlington Historical Commission has also voiced concern regarding the effects of increased traffic on these structures. Most of the buildings are located on quiet residential streets and should not be affected by station area traffic.

ECOLOGY

The highly urbanized residential-commercial character of this area generally resembles the other parts of the study corridor. In this developed region, only disturbed, marginal natural habitats are found, usually associated with open spaces or unique natural physical features. Two such features furnish areas of natural character with limited ecological distinction. Most of the open spaces in this section are sod-covered fields committed to outdoor sport activities and have recreational, rather than ecological, sensitivity. Portions of the Lexington Branch right-of-way, however, provide small, secluded open spaces supporting natural vegetation and desirable wildlife. Mill Brook is a unique physical feature which has historical and recreational significance for the Town of Arlington and passes through the center of the town. Although it has been modified by urban development, it also offers a natural riparian environment of some ecological merit, particularly at the western end of the section.

Existing Conditions

Lexington Branch Right-of-Way

The quality of the natural areas along the railroad in this section varies, but the generally more favorable areas, offering marginal habitats and visually pleasing settings, are found towards the western end.

The vegetation and wildlife along the right-of-way between Arlington Center and Forest Street are characteristic of disturbed urban environments and contain no unusual ecological features. The few shrubs in the right-of-way have some esthetic value, particularly to pedestrians walking along the tracks. West of Forest Street, the slightly depressed right-of-way is bordered by denser brush consisting of alder, willow, sumac and occasional saplings of maple and oak. A shallow, narrow drainage ditch on the northern edge of the right-of-way arises near Nourse Street and flows to just east of Lowell Street. Many opportunistic hydrophilic plants are found growing near this water source. In addition to typical urban birds, kingbirds, red-winged blackbirds, catbirds and warblers are found utilizing the habitat along the right-of-way. Some small mammals also use this area occasionally. From the MBTA bus facility west, the right-of-way displays multilayered vegetation with tall trees, high bushes and

vines and dense ground cover. Plant species include elm, oak, birch, poplar, elderberry and poison ivy. Since this portion of the right-of-way is in a lower density area and is buffered from human activities by abutting open spaces, it is more suitable to wildlife than the remaining right-of-way and supports a higher diversity and density of animals, particularly songbirds. Its close association with Mill Brook and the wooded areas around the Arlington Reservoir also increases its utilization as feeding or cover habitat.

Mill Brook

Mill Brook begins at the confluence of Sickle Brook, which flows from the west through East Lexington and portions of the Great Meadows, and the outflow of Arlington Reservoir, which stores the flows of Munroe and Reeds Brooks coming from the north. The brook flows southwest through the Town of Arlington to Mill Street, turns northward and flows parallel to the Mystic Valley Parkway before emptying into Lower Mystic Lake. During much of its course through Arlington, the brook has been channelized, rerouted and culverted. Long stretches of the brook are completely covered over by urban development. Two segments of Mill Brook would be affected by the project and are of primary concern. East of Mill Street and south of Fowles Pond Field, the proposed transit alignment crosses the brook. North of this crossing, the brook is culverted and flows underneath Fowles Pond Field for approximately 1,000 feet before resurfacing east of the Mystic Valley Parkway. West of where the project would cross, approximately 300 feet of the brook is above ground after flowing under the Arlington High School Field (Warren A. Peirce Field). The upper portion of this stretch of the stream bed is a shallow riffle flowing over a rubble bottom. The lower portion is pool-like, with a silty bottom because of the constriction of the culvert opening. The second segment of Mill Brook which would be affected by the transit extension is in the vicinity of the Arlington Heights Station where the brook is again crossed. Above this point, the brook is confined to a narrow (six-foot) concrete-walled channel, approximately three feet deep, which makes several awkward turns around an apartment complex parking lot and under the Lexington Branch railroad tracks. South of the crossing of the project and Mill Brook, the stream flows in a natural channel for approximately 1,500 feet before going underground for 300 feet west of Lowell Street. The stream bottom varies along this stretch from a silty muck bottom in the deeper, confined

channel to a rubble bottom where slope creates a faster current. Average yearly discharge, measured below the Arlington Reservoir outlet, is approximately ten cubic feet per second. The discharge varies seasonally, with higher flows during the winter months and lower flows during late summer and fall. Water quality conditions along Mill Brook vary according to location, season, and amount of discharge but in general indicate low to moderate levels of pollution. Averaged readings of various water quality parameters for samples taken at the mouth of Mill Brook are contained in the Supplemental Data Volume. Outflows from Arlington Reservoir, which receive heavy pollution from Reeds Brook, contribute high concentrations of iron, nitrate and phosphate nutrients, and organic matter. Oils, chlorides from de-icing salts, silt and other pollutants enter the stream at various points in the watershed. High levels of coliform bacteria present a serious water quality problem. A major bacterial source has been traced to overflows during periods of peak discharge from a trunkline sewer into a small tributary paralleling Ryder Street. Bacterial monitoring along Mill Brook indicates that other organic pollutant sources may exist but these have not been isolated. In addition to these chemical and organic pollutants, the stream bed and banks of Mill Brook, like many urban streams, are littered with debris. Pieces of scrap metal, tin cans, shopping carts, discarded cardboard cartons and chunks of concrete constitute much of the rubble substrata along the brook and detract from its scenic value.

Biologically, Mill Brook supports a moderate diversity of plant species, including aquatic macrophytes (such as Sagittaria, Peltandra, Sparganium and Lemna) growing near the stream banks and numerous common algal species including greens, blue-greens and diatoms. However, a low diversity of aquatic animals exist in the stream. The invertebrate fauna observed consists of pollution tolerant snails, leeches, planarians, and tendipedid fly larvae. Fish present, if any, are probably small sized, pollution tolerant species. Few high quality game fish are expected under the existing stressful environmental conditions. Nevertheless, Mill Brook has a high biological potential in the event of pollution abatement. Sufficient streamside vegetation of oak, maple, alder, birch and other plant species exist to provide cooling shade over the stream, particularly from the reservoir outlet to Arlington Coal and Lumber Co. However, riparian vegetation decreases along the open channel further downstream because of building encroachments or other urban factors.

Water supply is adequate throughout the year and under healthy water conditions and the elimination of litter, the open, natural channeled portions of Mill Brook could support a high diversity of aquatic organisms in an esthetically pleasing setting.

In addition to the nominal aquatic life presently found in the stream, the riparian environment of Mill Brook offers good wildlife habitat for many birds and mammals. The western part of the brook, because of its proximity to the natural setting of Arlington Reservoir and its denser streamside vegetation, is more important as cover and feeding habitat than the lower parts of the brook. A variety of songbirds, including kingbirds, catbirds, orioles, warblers and sparrows are found in the streamside vegetation; squirrels, raccoons, skunks and other small mammals also probably use this habitat even though they are, by nature, less observable.

Impacts

The major long-term ecological impact of the transit extension in this section would be the elimination of railroad right-of-way vegetation and consequently, alteration of the existing wildlife habitat; however, since the right-of-way vegetation exhibits a quantity and quality gradient (sparsely distributed near Arlington Center to denser and structurally more varied towards the Heights) and provides wildlife habitat in conjunction with the presence of surrounding vegetation (in residential areas, along Mill Brook, around the reservoir, etc.), the impact of the vegetation removal is not expected to result in any significant disruptions to wildlife. A few songbirds and small mammals may be displaced by the project and the populations of some species may be lowered locally. This effect would be more noticeable from the Arlington Heights station west because of the greater diversity of plants and animals found at this end of the section. The maintenance and operation of the transit system, which would produce noise and some vibration, would not have a significant effect on the animal populations in the area.

Major short-term construction impacts would be experienced where the Red Line Extension would cross Mill Brook. East of Mill Street and south of Fowles Pond Field, the transit crossing would require the replacement of the existing culvert. During the construction process, Mill Brook would be temporarily rerouted in a side channel so that a new, structurally sound culvert could be

positioned. Although this procedure would insure continuity of flow in the brook, some degree of siltation would be inevitable. In addition to sediments picked up in the temporary channel, other particulate matter would enter the stream from exposed ground surface and construction operations. Erosion control measures such as the use of berms, settling basins and mulches would prevent serious sedimentation problems. Siltation in the brook would cause a temporary degradation in water quality, lowering the concentration of dissolved oxygen and interfering with biological processes. Most of the sediments would settle out of suspension once they reach the quiet waters of Lower Mystic Lake, where a delta-like deposit of silt has built up over the past 30 years at the mouth of Mill Brook.

Biologically, the siltation would eliminate most benthic communities in open stretches of the brook due to suffocation. Fish would probably be forced to move downstream into Lower Mystic Lake. However, after construction in the streambed is completed and the adjacent slopes are stabilized with sod or grasses, benthic communities would recolonize the brook and fish could again find suitable water.

For the Arlington Heights transit station, where the brook would again be crossed, a similar, temporary rerouting procedure would be utilized during construction. However, a new channel would be created for the brook which would improve hydrologic performance by eliminating some of the awkward, near 90-degree bends and by increasing the existing inappreciable slope. Although this improved flow design would reduce existing flood hazards, it would not open any presently covered portions of the stream, thereby increasing the usable aquatic habitat. Stream siltation would again be a problem, resulting in water quality degradation and elimination of some aquatic organisms, similar to impacts experienced near the Arlington Center crossing. After construction is completed, however, the stream would recover to pre-construction conditions.

Necessary Federal and State water-related permits will be obtained during the final design stage for the transit project activities related to Mill Brook near Arlington Center and Arlington Heights.

Maintenance and operation of the transit facilities is not anticipated to adversely affect Mill Brook. The potential for

contamination of the brook from polluted oil and grit runoff produced in the Arlington Heights Station parking garage could be controlled through the use of oil/grit separators in the drains of the parking structure. Although chlorides from deicing salts would not be retained by these devices, the amount of chlorides contributed from the parking garage would be minimal. No deicing salts would be applied in the parking garage, but minor amounts may be used on garage approach lanes or bus lanes. Since the major source of chlorides in Mill Brook is from deicing salts washing off the urban street system or from salt stockpiles, the small amounts added to the stream because of the Red Line Extension are not expected to cause a measurable increase in chloride concentrations in the brook.

NOISE AND VIBRATION

Ambient Noise Conditions

Present ambient noise along the segment from Arlington Center to Arlington Heights is controlled by Massachusetts Avenue to the south of the alignment and Route 2A to the north of the alignment. At the proposed Arlington Heights Station site, the present MBTA bus terminal is an equally important ambient noise source during daytime hours.

The 24-hour noise pattern at Arlington Heights, shown in Table VIII-14, indicates the noise levels at the short-term measurement sites.

Table VIII-14

SHORT-TERM NOISE MEASUREMENTS IN ARLINGTON

Site No.	Location	Time of Measurement	Sound Levels (dBA)			
			<u>L_{eq}</u>	<u>L₁₀</u>	<u>L₅₀</u>	<u>L₉₀</u>
11	Central Street	12:45	55	57	53	51
13	Symmes Hospital	15:45	56	59	55	51
14	Cutter School	16:15	54	57	53	49
15	Peirce Field	16:30	49	51	47	43
23	Locke School	13:45	56	59	55	49
24	Downing Square	14:15	65	69	65	55

See Project Alignment Figure II-1D for site locations.

The L_{eq} sound level at Arlington Heights is approximately 44 dBA at night, and if the short-term data were corrected by 10 dBA for nighttime levels they would also be in the mid-forty range. Based on these data, this segment falls into the "average residential" category of Appendix D. Figure VIII-9 shows the diurnal noise pattern at Arlington Heights.

Future Noise From Transit Operations

Line Segment Operations

Airborne noise from train operations will not be a problem since the track will be in tunnel. Noise levels in Arlington Heights may increase by three to four decibels at peak hour (a.m. rush hour) due to feeder buses serving the station. Off peak-hour bus traffic information is not available at this time.

Arlington Heights Station

Noise levels at Arlington Heights Station may increase by just a few decibels during peak a.m. rush hour because of feeder bus operations and cars heading for the station. However, there is already considerable bus activity at this location, and the increase in noise would be only minor.

Vibrations

Ground vibration may be a problem at a few places along the alignment from Arlington Center to Arlington Heights. Where residences are within 100 feet of the proposed alignment, special trackwork may be necessary to keep ground vibration levels below the threshold of human perception. These would be given more detailed analysis during final design.

AIR QUALITY

Areawide air quality impacts and construction impacts were discussed in Chapter II, and the following discussion is restricted to localized CO effects in the vicinity of the Arlington Heights Station. The details of the analytical methodology and the results are presented in Chapter II of Appendix H. The analytical method considered the effects of induced traffic at the station in making air quality projections.

The predicted levels of carbon monoxide in the vicinity of the Arlington Heights Station in the 1974 base year, 1980 no-build case, and the three 1980 build alternatives are given in Table VIII-15. CO concentrations for all 1980 cases are substantially lower than in 1974. Although some quite modest increases in CO levels occur for some build cases over the no-build case, all concentrations are well below the CO standards, and no violations are expected.

Table VIII-15

PREDICTED CARBON MONOXIDE CONCENTRATIONS (PPM)
IN THE IMMEDIATE VICINITY OF
THE ARLINGTON HEIGHTS STATION

<u>Meteorological Condition</u>	<u>Averaging Period</u>	<u>1974</u>	1980: No Build Case	1980: Build Case Termination at:		
				<u>Route 128</u>	<u>Arlington Heights</u>	<u>Alewife</u>
Worst Case	8 Hours	3.1	1.5	1.7	1.8	1.5
	1 Hour	4.8	2.5	3.1	3.2	2.5
Most Probable	8 Hours	1.4	0.6	0.6	0.6	0.6
	1 Hour	1.9	1.0	1.2	1.2	1.0

CONSTRUCTION IMPACTS

The major adverse impacts of construction would be air and noise pollution, traffic disruptions, maintenance or relocating of utilities, siltation and erosion, effect on existing structures, disposal of excavated materials, spillage, effects on groundwater table and possibility of encountering an underground stream. A discussion of the general construction impacts can be found in Chapter II. The remaining portion of this section discusses specific construction impacts applicable to this segment.

Traffic Disruption

Decking and construction staging will permit continuous traffic operations on all streets. At locations where streets will be reconstructed, traffic may be temporarily rerouted to adjacent cross streets. The affected streets are Water Street, Mill Street, Grove Street, Brattle Street, Forest Street, Lowell Street, Park Avenue and Drake Road.

It is assumed that the Lexington Branch will be abandoned.

Hydologic

At the Arlington Heights Station the Mill Brook channel will be relocated. For a discussion of the proposed work see Page VIII-4.

Utility Relocation

There are major utility crossings in this segment. For a listing of the utilities requiring relocation or maintenance, turn to Page VIII-2.

Effect on Existing Structures

Certain buildings, such as Winslow Tower and Brigham's Processing Plant, will require some protective measures to prevent ground movements and surface settlements.

Disposal of Excavated Materials

It is estimated that there will be 588,000 cubic yards of excavated material in this segment.

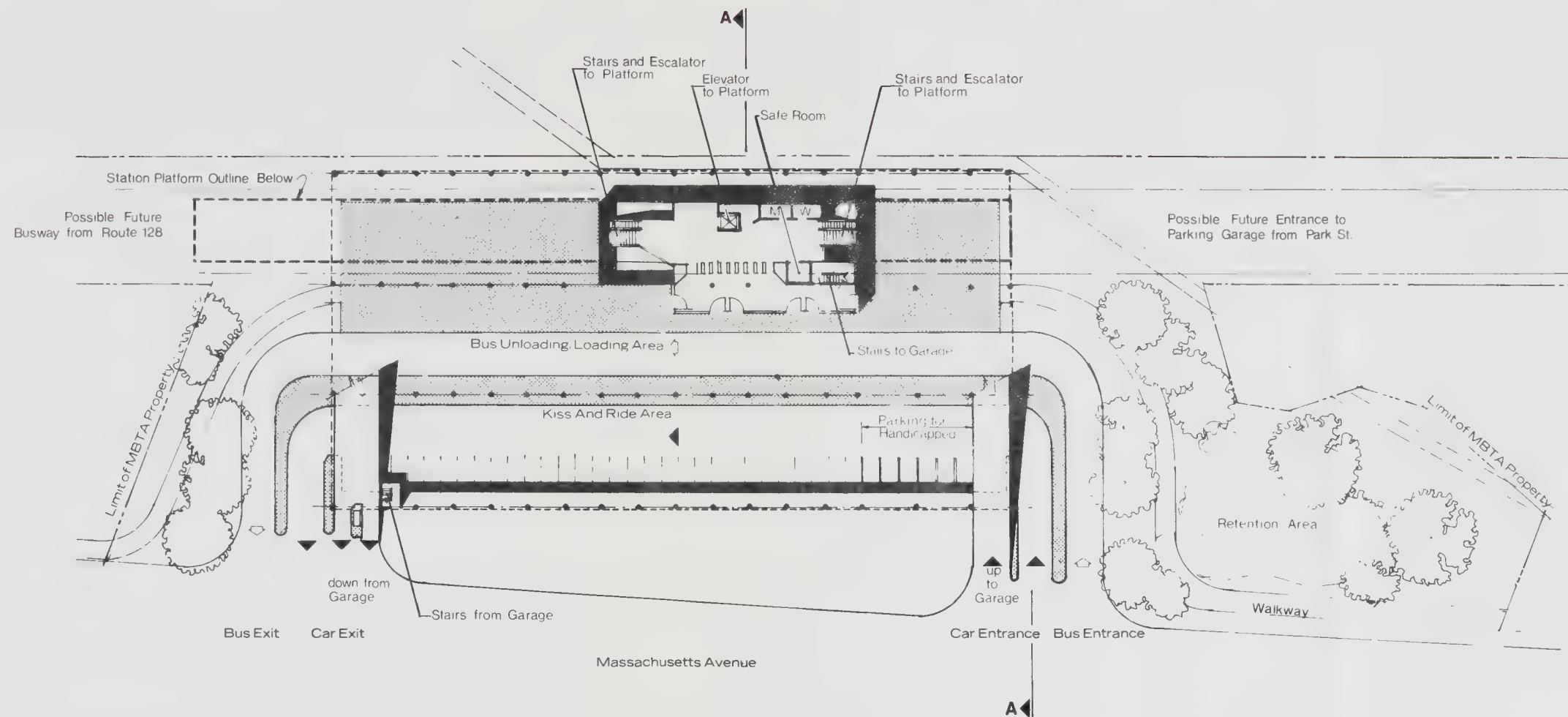
Parks, Recreation and Historic Resources

No publicly owned parkland would be taken for the proposed project or any of the alternatives. For a discussion see Page VIII- 56.

Thirteen structures of historic significance have been identified within this section of the project. None of the buildings would be taken for construction. For a discussion of impacts see Page VIII- 59.

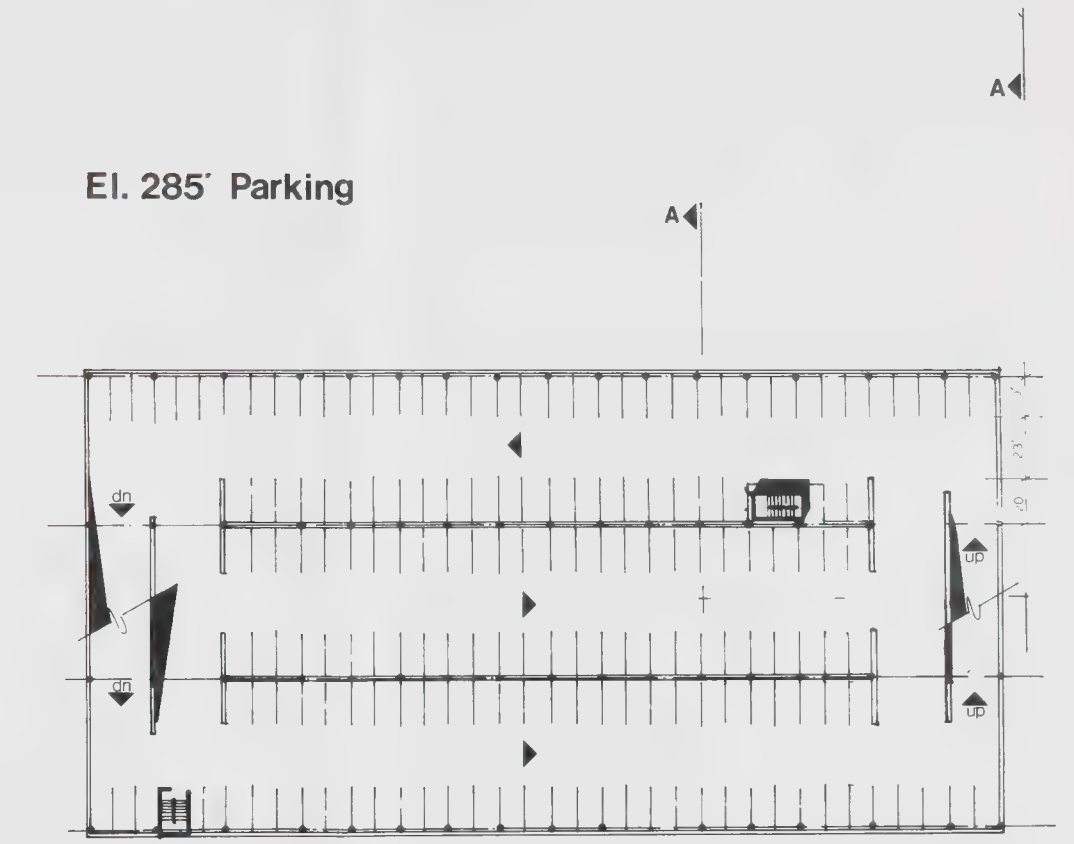
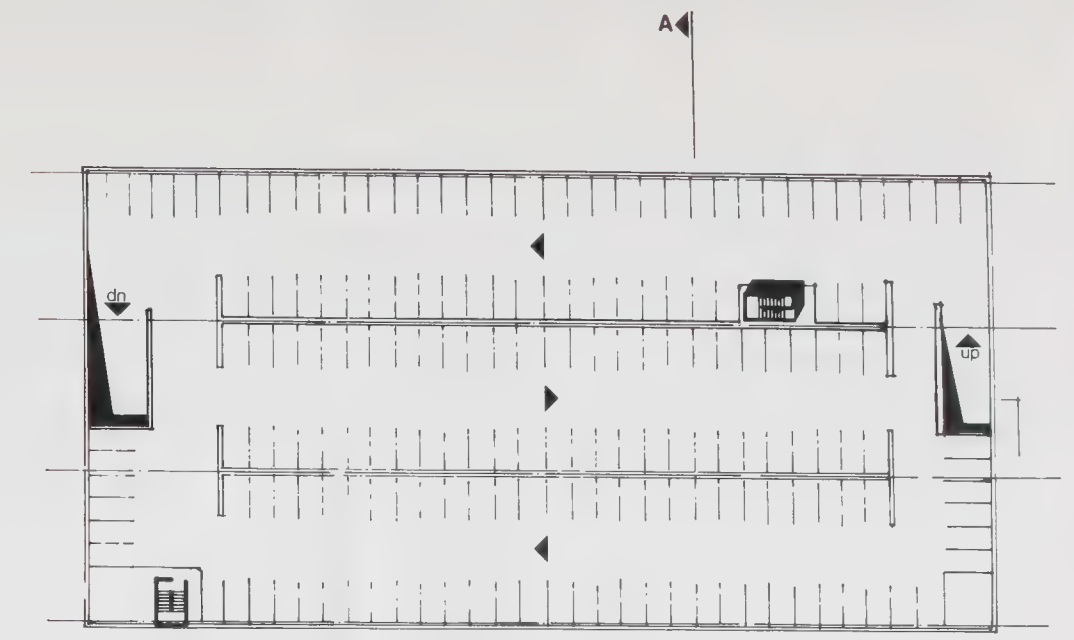
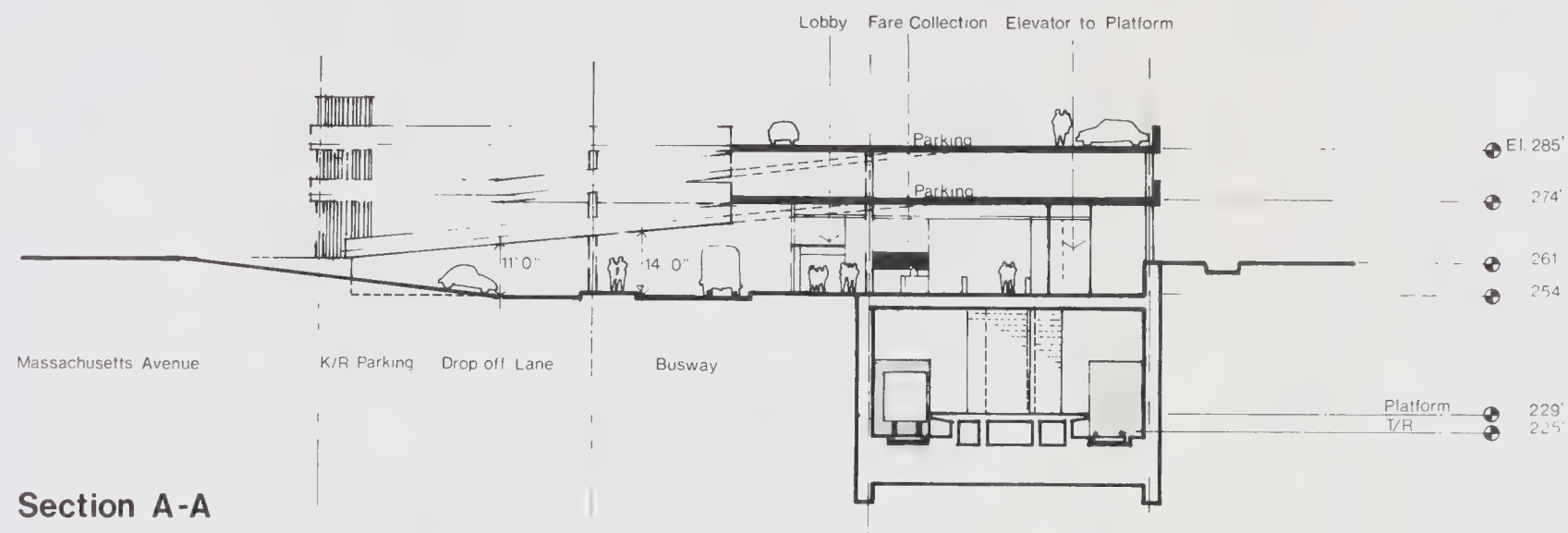


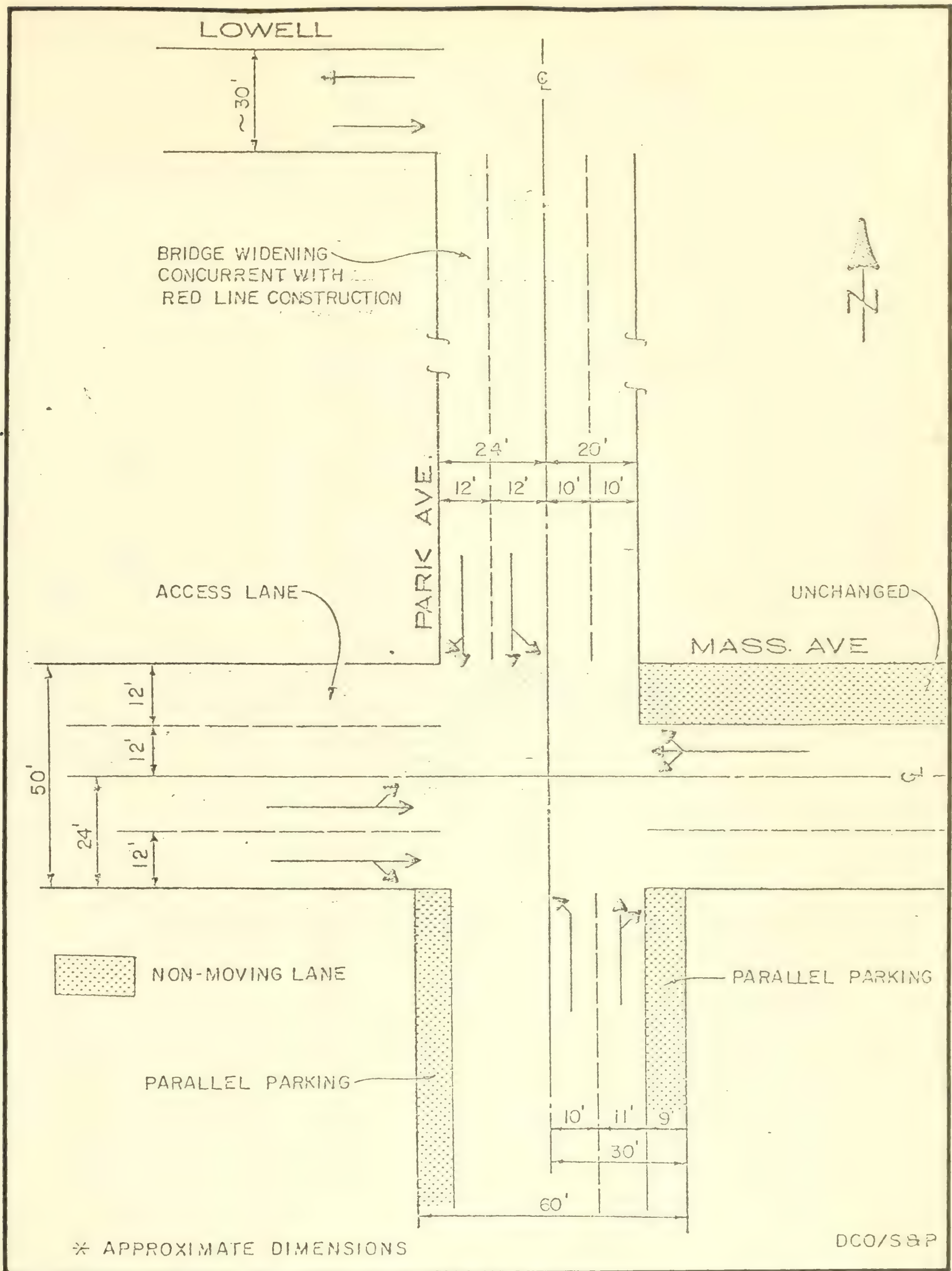
Note:
For Zoning Classifications
see Appendix F, page F-31

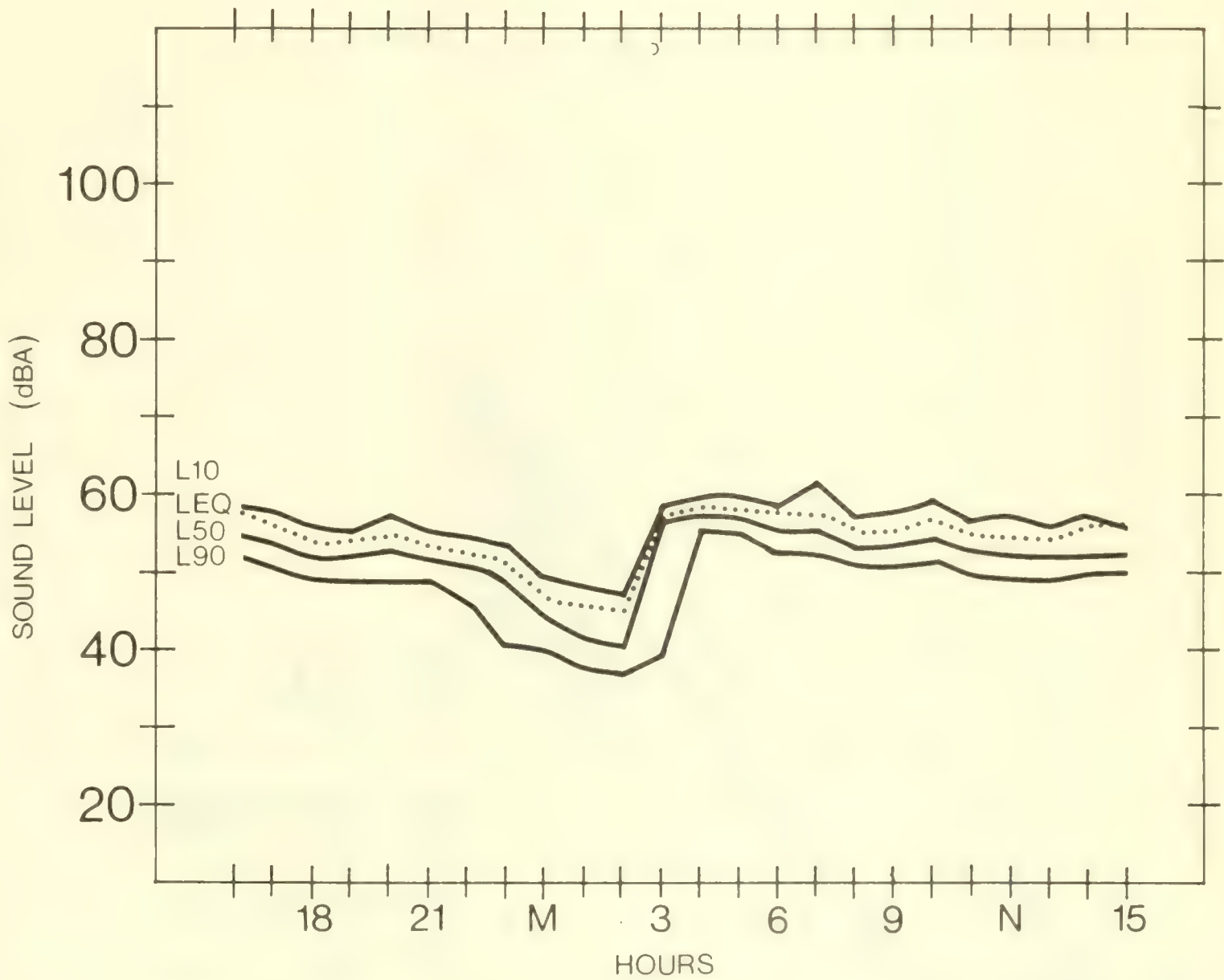


Ground Floor Plan
El. 255'









RED LINE EXTENSION STUDY
Massachusetts Bay Transportation Authority

ARLINGTON HEIGHTS
DIURNAL NOISE PATTERN
FIG.VIII-5

Chapter IX

ALTERNATIVES

Chapter IX

ALTERNATIVES

INTRODUCTION

The purpose of this chapter is to describe the analysis of alternatives leading to the selection of the Project. The chapter is organized into four sections.

The first section describes the major transportation patterns and problems in the Northwest Corridor.

The second section deals with the preliminary analysis and selection of a transit technology. Alternatives examined in this section include Red Line third rail transit, a Green Line light rail extension, commuter rail improvements, and bus improvements over local streets with a no-build alternative.

The third section presents a more refined analysis for four specific Red Line alignments to Alewife. The four alignments include (1) Garden Street, (2) Harvard Square-Porter Square-Alewife, (3) Harvard Square-Davis Square-Alewife and (4) Harvard Square-Porter Square-Davis Square-Alewife.

The fourth section discusses transit extension options from Alewife to Arlington Heights and Route 128. Options considered include improved commuter rail, new light rail transit, Red Line third rail transit and bus improvements. Three possible alignments for an extension refer to fig. IX-1, of the Red Line beyond Alewife were examined: the MBTA Commuter Rail Fitchburg Route, Route 2 Corridor, and the MBTA Lexington Branch. This section also discusses the three potential terminal points: Alewife, Arlington Heights, and Route 128 in Lexington.

TRANSPORTATION PATTERNS IN THE NORTHWEST

The Northwest Corridor can be defined approximately as the ten municipalities roughly bounded by the Charles River on the south, I-93 on the north, and I-495 on the west.

The destinations of work trips originating in these municipalities are distributed among numerous communities in eastern Massachusetts, with Boston and Cambridge being the two principal destinations. Projections of 1980 work trips indicate Boston as the first, second, or third most common destination for trips originating in all ten northwest communities, while Cambridge would be one of the three most common destinations for work trips from six of these communities, and the fourth most common destination from the four remaining communities.

Due to the location of Cambridge, a large portion of auto trips destined to Boston from the northwest must pass through Cambridge. This traffic converges on a limited number of bridges crossing the Charles River between Cambridge and Boston. In addition to this Boston-bound traffic, Cambridge streets must serve traffic from other northwest communities with destinations in Cambridge as well as traffic originating and terminating within the City. Harvard Square is located at approximately the geographic center of Cambridge, and most of the major radial streets serving traffic to or through the City intersect here.

This automobile congestion is further aggravated by the convergence of the MBTA Red Line, four trackless trolley routes, and ten bus routes at Harvard Square. The trackless trolley routes and two of the bus routes approach the square through converted streetcar tunnels which extend about 1,000 feet in two directions from the station. However, due to ventilation problems in the tunnels, most of the buses must load and unload on the streets. Even if all bus routes were able to operate in the tunnels, congestion would only be reduced in the immediate vicinity of Harvard Square. During peak hours, the streets over which these bus routes operate carry heavy traffic volumes. Mt. Auburn Street and Concord Avenue--used by three trackless trolley routes and three bus routes--are narrow and congested. Massachusetts Avenue--used by one trackless trolley route and three bus routes--has two through lanes in each direction but has many congested intersections.

Since there are no public parking facilities within easy walking distance to the Harvard Square Station, there is no opportunity for park-and ride use of the Red Line at that point. There are a limited number of curb and lot spaces at Central and Kendal Squares, the only other Red Line Stations in Cambridge; a few of these are

controlled by the MBTA. Park-and-ride patrons compete for these spaces with persons whose final destinations are near Central or Kendall Squares.

The BTPR analysis of the Northwest Corridor examined radial travel in four subcorridors in addition to Cambridge: Watertown/Belmont/Waltham, Arlington/Lexington, Somerville and Medford/Winchester/Woburn. In the Watertown/Belmont/Waltham subcorridor radial traffic to Cambridge and Boston utilizes two expressways or three arterial street combinations. The two expressways (Route 2 and the Massachusetts Turnpike) are located on the fringes of this sub-corridor, and have poor accessibility from many points within the three towns. Route 2 is a six- to eight-lane highway, and is free-flowing from Route 128 to the Arlington-Cambridge line. However, Route 2 ends at its intersection with Alewife Brook Parkway, a narrow four-lane roadway which currently carries more than twice the traffic for which it was designed.

The three arterial road combinations in the Watertown/Belmont/Waltham corridor are Concord Avenue from Lexington to Harvard Square; Trapelo Road/Belmont Street/Mt. Auburn Street from the Waltham-Lincoln line to Harvard Square; and Route 20 from the Waltham-Weston line to Brighton. Congestion on Concord Avenue occurs at Belmont Center, Alewife Brook Parkway, and Harvard Square. The Trapelo Road/Belmont Street/Mt. Auburn Street corridor is a good local travel route, but it is limited as a through route because of the commercial development along much of its length. Heavy congestion occurs on Route 20 at Waltham Center and at Watertown Square.

Most of the radial bus routes in the Watertown/Belmont/Waltham corridor travel over the expressways or arterial road combinations described above and therefore encounter the same problems as automobile traffic. Commuter rail service in the subcorridor is operated on the MBTA Fitchburg Route with stops in Waltham and Cambridge (Porter Square), and a terminus at North Station in Boston. The two stops in Belmont were reopened in 1973, after being closed for 15 years, and

have not attracted substantial ridership. Passengers from west of Cambridge can get off at Porter Square, but must then transfer to buses there in order to reach most important destinations in Cambridge.

The main radial routes in the Lexington/Arlington subcorridor are Route 2, Massachusetts Avenue and Route 225/Route 2A/Massachusetts Avenue. Traffic problems on Route 2 were described above. Outside of Cambridge the other routes can adequately accommodate existing traffic volumes except for areas of congestion at Arlington Center and Lexington Center. Radial bus service from Arlington to Harvard Square is provided over Massachusetts Avenue and Route 2 and also through Belmont via Concord Avenue. Despite frequent service, buses on all these routes become overcrowded in Cambridge. Some buses on Route 2 operate through to Lexington and a connecting bus operates to Lexington and Bedford from the end of the Massachusetts Avenue route. The MBTA Lexington Branch runs parallel to Massachusetts Avenue and Route 225 through Arlington and Lexington to Bedford. This one-track line operates one round trip from Bedford to Boston each day. Two bus routes through Somerville provide service from Arlington Center to Lechmere, but these routes are long and slow.

In the Somerville subcorridor radial traffic to Cambridge must travel over local streets. At the eastern end of Somerville, the McGrath-O'Brien Highway (Route 28) and I-93 serve radial travel to Boston. I-93 is a limited access highway but during peak hours it becomes congested at its junction with the Northeast Expressway in Charlestown. Although Route 28 is grade-separated through most of Somerville, it is severely congested in several areas.

Public transportation in Somerville is provided exclusively by bus. There are eight routes which are essentially radial; three of these connect with the Green Line at Lechmere and five connect with the Orange Line at Sullivan Square. Due to the length of the routes, many peak-hour buses are overcrowded. There is only one direct bus route between Somerville and Harvard Square.

Although Medford, Winchester and Woburn were considered as a subcorridor in the BTPR Study, it is more appropriate to treat the transportation problems of these communities as an independent issue. Cambridge is a much less important destination for work trips from these communities (no more than 10% for any of the three communities) than Boston, and most of the highway traffic to Boston from this subcorridor can bypass Cambridge. Bus service in the subcorridor ties into the Orange Line rather than the Red Line or the Green line and railroad commuters use the New Hampshire Main Line and the Woburn Branch rather than the Fitchburg Main Line or the Lexington Branch.

NARROWING OF ALTERNATIVES: TECHNOLOGY

During the initial phases of the BTPR Study, a wide variety of possible projects was examined for the Northwest Corridor. This section of the EIA reviews four major technology options for the corridor: Red Line Extension, Green Line (LRV) Extension, upgraded commuter rail, and the no-build option, which would encompass improved bus facilities. The process of narrowing the technology options took place primarily during the first phase of the BTPR Study. All data presented in this section have been updated, consistent with the most recent available regional travel data prepared by the Central Transportation Planning Staff (CTPS).

Technology Option "A": Red Line

A Red Line Extension from Harvard Square to Alewife Brook Parkway was proposed at the beginning of the BTPR Study as part of the MBTA's approved Program for Mass Transportation; this proposed extension was included in the region's comprehensive transportation plan. Following the decision to restudy all of the proposed highway investments in the region, it was decided to examine all alternatives to the Red Line Extension in the context of the comprehensive multimodal planning review. Based on an analysis of transportation needs from both a local and a regional perspective, the BTPR Study concluded that a Red Line Extension from Harvard to at least Alewife Brook would represent the single

highest benefit transit project in the region. With any of the alignments beyond Harvard, an extension of the Red Line to Alewife would have the highest absolute level of user benefits of any transportation project studied by BTPR. The linking up of a "dead-end" expressway with the highest quality transit line in the region would afford near-optimum investment for maintaining the continuity of the regional transportation system.

Northwest Corridor Travel

A Red Line extension would most effectively accommodate the radial demand pattern of the Northwest Corridor, which is oriented towards downtown Boston and towards inner Cambridge. Other alignment options, which would bypass Cambridge and enter Boston through the North Station area, would be satisfactory only in terms of a regional strategy to provide improved access to the Boston CBD. This, of course, is contrary to the regional policy adopted by state and local governments, and mandated by the Environmental Protection Agency (EPA) in its attempt to alleviate regional air quality problems. Projections for 1980 indicate that more than 11,000 trips per day would use the Red Line between the outer Northwest Corridor and the Harvard, Central and Kendall stations in Cambridge. Previous studies of anticipated 1990 ridership have indicated continued intensification of this pattern.

The actual extent to which the Red Line could interconnect a spine of activity in the Northwest Corridor depends on the final selection of the alignment. Some improvement of this pattern would occur with any alignment beyond Harvard Square. However, the greatest opportunity for interconnection of corridor activities would occur with an alignment through Porter and Davis Squares. These issues are discussed later in this chapter.

Boston Core Travel

The Red Line would have the best running times to the major activity centers in the Boston CBD. Travel time from Porter Square to Park Street is estimated at 9.2 minutes. In terms of travel time, Porter Square would be closer to Park Street than Lechmere Station. The Red Line's exceptional travel time characteristics are attributed to the long station

spacing and the high geometric standards adopted when the line was first constructed in 1912. With cars nearly 70 feet long, the Red Line represents the highest level of transit technology available in the Boston region.

The Red Line's downtown stations serve the majority of CBD trips directly, with good running times. Specifically, over 60 percent of Red Line riders walk directly from the stations to their destinations, while only a small percent of the number transfer to other lines primarily to reach the 20 percent of the trip ends located in the Back Bay. Therefore, because the Red Line operates in high running speeds directly to the area with the highest volume of destinations (Washington Station), it has good overall distribution characteristics.

Operating Costs

The Red Line Extension has the lowest cost per passenger characteristics of any option tested. The absolute marginal costs of operating very high frequency service from Harvard Square to Porter Square and Alewife are somewhat lower than the costs of operating less frequent service on the Green Line from Lechmere to Porter Square and Alewife due to the smaller increase in distance, and subsequent lower operating mileage. In short, extending the Red Line beyond Harvard Square would provide the most cost-effective service to the North Cambridge and Somerville areas and beyond.

In addition to line haul costs, a Red Line Extension from Harvard Square has the greatest potential for significantly reducing bus operating costs. The proposed extension would permit most of the bus routes along Massachusetts Avenue to be rerouted into the new stations and would reduce the frequency of service. Based on demand simulations for each of the other alternatives, considerable inner Northwest demand would still be oriented through Harvard Square for Cambridge destinations and certain trip destinations in Boston. All such traffic could feed directly into the proposed new Red Line stations, thereby permitting subsequent restructuring of feeder bus routes.

Additional cost savings and improved efficiency would result by routing the Red Line through Davis Square. Davis Square is a critical node in the Northwest Corridor bus network as all routes presently have one end at the rapid transit facility (Harvard Square or Lechmere). The proposed Red Line Extension through Davis Square would permit several routes to feed rapid transit at two ends, with productive trips made in both directions. This is discussed more fully in the following section on Red Line alignment options.

Environmental/Right-of-Way Considerations

The Red Line option requires little acquisition of property other than railroad rights-of-way. Compared to the other two options, private property takings and displacements would be minimal and relatively small.

Summary

The BTPR Study recommended the Red Line Extension as the primary transit facility in the Northwest Corridor, reaffirming the conclusion of the 1966 Program for Mass Transportation as well as numerous earlier studies. A clear consensus was reached to focus further planning attention on detailed alignment and terminal alternatives for the Red Line Extension based on the project's high level of user benefit, its comparatively low level of incremental operating cost, and its superior ridership potential. The Green Line option would attract approximately 35 percent fewer passengers from Porter Square and Alewife, while the commuter rail option would attract almost 60 percent fewer riders than the Red Line.

Alternative Technology "B": Green Line to Alewife

During the Northwest Corridor planning process, extension of Green Line service from Lechmere to Alewife, via Porter Square, was considered as an alternative to the proposed project. This option was examined by the MBTA in 1966 in the development of its Program for Mass Transportation. The Green Line alternative was thoroughly examined within a participatory framework in the BTPR Study, during which the basic definition of the proposed Red Line project was formulated.

The Green Line alternative was rejected in 1966 and again in 1972 for two main reasons: 1) the Green Line alternative would bypass the critical area for Northwest Corridor destinations; and 2) the Green Line alternative would be a longer and slower route

from North Cambridge to the Boston CBD, resulting in lower ridership and higher operating costs than the Red Line option.

Northwest Corridor Travel

Each Northwest Corridor radial alternative was examined in consideration of the fact that inner Cambridge (Harvard Central, and Kendall Squares) attracts approximately the same number of Northwest Corridor work trips as the Boston CBD (about 25,000). Traditionally, fewer trips to the spine of economic activity along Massachusetts Avenue in Cambridge have been made by transit than to the Boston core, and regional radial travel has often been perceived as an issue of travel to the Boston CBD. However, the importance of Cambridge as a major core destination (particularly from the Northwest) is being acknowledged in regional, state, and national policies which are attempting to reduce auto dependancy. In particular, EPA air quality control strategies have emphasized the need for major Cambridge destinations to be served directly by transit.

The Green Line alternative would better interconnect the Northwest Corridor with the Union Square and Lechmere/East Cambridge area; however, neither of these areas compare with the Harvard-Central-Kendall area in terms of absolute number of destinations. Cambridge attracts more than four times as many work trips as Somerville.

"Opening day" forecasts for the Red Line Harvard-Porter Square-Alewife alternative indicate that 5,600 passengers would be destined for Harvard, Central and Kendall Squares from the outer northwest communities each day. These passengers would not be served by an Alewife-Porter Square-Lechmere Green Line facility. Over time, the number and relative importance of inner Cambridge transit destinations is expected to increase as this area becomes more and more like the traditional core in terms of regional employment density and parking and other transportation control restrictions.

Boston-Core Travel

The Green Line alternative would provide direct service from the Northwest Corridor to downtown Boston. However, the alignment would involve longer travel times than the proposed Red Line project, with a considerably higher amount of new operating mileage. Consequently, operating costs would be higher and ridership would be lower.

Under the Green Line alternative, the running time from Porter Square to Park Street would be approximately 15 minutes; this is more than five minutes longer than with the proposed Red Line Extension. Longer running times have a distinct impact on ridership. First, the additional running time results in a lower "mode split" to downtown for the corridor as a whole. Second, persons approaching a Green Line Porter Square Station by feeder bus would still be able to reach many downtown destinations in minimum travel time by routing via Harvard Square. Consequently, the travel forecasts indicate considerably lower Northwest-to-Boston ridership on the Green Line alternative.

Operating Costs

The Green Line alternative to Porter Square and Alewife would have considerably higher operating costs than the comparable Red Line alternative. The headways of trains operating to Harvard Square on the Red Line and to Lechmere on the Green Line are controlled throughout most of the day by the requirements at the opposite ends of the routes. Therefore, it may be assumed that a Red Line Extension to Alewife would not alter Green Line schedules at Lechmere, and that a Green Line Extension to Alewife would not alter Red Line schedules at Harvard Square. Based on 1974 unit costs, extension of the Red Line to Alewife would increase operating and maintenance expenses for the MBTA's rapid transit system by \$3,610,000 per year over existing service, while extension of the Green Line to Alewife would increase operating and maintenance expenses by \$4,330,000 per year; this is \$720,000 per year more than the increase for a Red Line Extension. Both extensions would result in elimination of some existing bus service which would reduce costs in this area. However, there would be a smaller reduction in bus costs

with a Green Line Extension due to the need to maintain bus service to Harvard Square from the northwest in the absence of a Red Line Extension. The Green Line Extension would also serve about 35 percent fewer passengers.

Environmental/Right-of-Way Considerations

The Green Line option was eliminated primarily on the basis of its service characteristics. Extensive right-of-way engineering was not undertaken. However, preliminary analysis did reveal that a private Green Line right-of-way between Porter Square and Lechmere was not consistent with continued operation of freight and commuter rail service. Considerable dislocation of freight access would be involved in any creation of a private right-of-way for Green Line service. These considerations become more important when viewed in light of Somerville's desire to remove freight service from the Cutoff and the resultant increased reliance on the Fitchburg Main Line for freight service. Initial investigations revealed that some right-of-way takings would be associated with any plan which maintained both freight and Green Line service along the right-of-way.

Summary

At the close of the first phase of the BTPR Study, the Green Line alternative to Alewife was eliminated in favor of further examination of Red Line alignment alternatives. The Green Line option is characterized by a lack of service to major Cambridge destinations, lower anticipated ridership the Boston CBD, lower levels of user benefits (i.e. less savings in travel time) and higher operating costs. A consensus was reached to concentrate any future Somerville-oriented Green Line analyses on a possible extension from Lechmere towards Ball Square and Tufts University. This is a different corridor from that which would be served by the Red Line Extension, and, therefore, it is not competitive with extended Red Line service.

Alternative Technology C: Commuter Rail

A commuter rail alternative to the Red Line Extension was examined in the development of the proposed Northwest corridor plan. Under this alternative the Red Line terminal would remain at Harvard Square, and high frequency rail shuttle service would be operated from North Station to Alewife and/or beyond. This commuter rail shuttle service was also examined in the first phase of the BTPR Study; however, it was rejected as an alternative to the Red Line Extension because of poor ridership, lack of service to Cambridge destinations, lack of clear user benefits (little savings in travel time) and a higher per-passenger operating cost.

Corridor Travel

The Commuter Railroad (CRR) shuttle was the least feasible alternative examined in terms of serving inner Cambridge destinations. The technological characteristics of CRR vehicles are more oriented to high line speeds than to multistop and multistart urban service. Thus, the CRR shuttle was assumed to provide non-stop service from Porter Square to North Station. Locating a station in the vicinity of Lechmere would not be possible without a significant restructuring of the yards in that area. All riders destined for Cambridge would have to rely on buses to Harvard Square for intracorridor service.

Boston Core Travel

The CRR shuttle to North Station would divert some, but not all, of the Boston-bound patrons from the northwest away from Harvard station on the Red Line. Ridership simulations indicate that the CRR shuttle with stations at Porter Square and Alewife would attract approximately 33 percent of the riders of a Red Line Extension to Porter and Davis Squares. As noted above, none of the Cambridge riders would be attracted to the facility. In addition, a large segment of the Boston ridership with destinations at Park Street, Washington, and South stations would choose to bus to Harvard to minimize their total travel time. Approximately half of the trips destined for the Boston CBD would bypass the CRR shuttle and would be routed via Harvard as at present.

The user benefits resulting from this option would be minor as little savings in travel time would actually occur. The express running time of eight minutes from Porter Square to North Station would seem to make the option competitive when compared with the running time of less than ten minutes to Park Street under the Red Line Extension. However, the average time spent in distribution from North Station to the final CBD destination is about 13 minutes, more than that of the Red Line. Finally, a major difference in travel time characteristics would result from the differences in service frequency. The CRR shuttle could operate at 7.5-minute headways while sharing a right-of-way with other Fitchburg Main Line operations. By contrast, the Red Line would operate on two-minute headways because of the density of demand experienced on the Ashmont and Quincy end of the service.

Operating Costs

The cost per passenger with the five-car Rail Diesel Car (RDC) shuttle from Alewife and Porter Square to North Station at 7.5-minute headways would be somewhat greater than the cost per passenger incurred by the Red Line Extension to Porter Square and Alewife. Specifically, operation of the CRR shuttle is estimated to cost 57 percent as much as the comparable Red Line alignment, but would carry only 33 percent of the ridership.

Environment / Right-of-Way

The CRR shuttle would not create the freight access dislocation problems that would occur with the Green Line option. However, it would rank below both the Red Line and Green Line Extension options in terms of environmental benefits due to the anticipated substantially lower ridership levels.

Summary

Improved commuter service on the Fitchburg Main Line was included in the Northwest Corridor plan as an optimum method for directly carrying persons destined for the Boston CBD from the far suburban communities along the Main Line to North Station. However, improved CRR services calling for a shuttle between Alewife and North Station would not

be an effective alternative to rapid transit service in the inner communities of North Cambridge and Somerville. The combination of Fitchburg service beyond Alewife with a transfer to a Red Line Extension would enhance the benefits of each as part of an integrated system.

Table IX-1 compares the alternative technologies for extension of the transit service to Alewife. Data for the other Red Line alignments, to be discussed in the next section, are also presented in this table.

No-Build

The option of not building a major new transit facility in the Northwest Corridor was also examined in the Northwest Corridor planning process. In essence, this option was rejected at the end of the first phase of the BTPR Study. However, consideration of the no-build as the base case must continue throughout the environmental analysis and decision-making process.

Two levels of the no-build option were examined. The first is the absolute "change-nothing" option. The second would involve major reconstruction of the street system to create private and/or priority rights-of-way for buses.

The BTPR Study made a preliminary investigation into the possibility of reconstructing Massachusetts Avenue from Harvard Square to Porter Square as an alternative to a major new transit facility in the area. This concept was examined in a participatory framework (i. e. with the city and in workshops) and was eliminated from further study for the following reasons:

- Massachusetts Avenue has only two through lanes in each direction as well as parking and local access lane.
- Massachusetts Avenue is a linear strip consisting of locally-oriented shops and businesses. Most of these merchants do not have off-street parking available and consequently, they rely on a very high turnover of the limited spaces for access.

Table IX-1

COMPARISON OF TECHNOLOGY ALTERNATIVES - TO ALEWIFE

Alternative	Annual Operating and Maintenance Cost	Annual Capital Cost	Annual User Benefits	Benefit/Cost Ratio	Daily Riders One-Way
<u>Alignments with Stations at Porter Square and Alewife</u>					
Red Line via Porter Square	3.61	10.12	15.98	1.16	22,800
Green Line from Lechmere	4.33	3.55	8.09	1.03	14,500
Commuter Rail from North Station	2.06	--	1.98	0.96	7,500
<u>Other Red Line Alignments</u>					
Direct to Alewife	2.92	7.77	12.29	1.15	14,000
Via Porter Square and Davis Square	4.41	11.42	16.70	1.05	26,000
Via Davis Square	4.15	10.78	13.92	0.93	21,700

- Elimination of the parking/access lane would not be acceptable to the local community. Further, it would probably be impossible to enforce this as a "no-stopping" lane for its entire distance. Drivers would continue to use the lane for picking-up and dropping-off passengers and also for standing for short periods of time.
- Elimination of one of the through lanes for general traffic would result in only one through lane in each direction. This would be unacceptable given present levels of congestion with twice that capacity.
- A reverse flow concept would not be feasible because the peak hours (especially in the afternoon) are characterized by congestion in both directions. Neither direction of travel could afford to lose one half of its present capacity.

Short of reconstructing Massachusetts Avenue, the no-build option consists of maintaining existing travel conditions. This option has been rejected on the basis of its inconsistency with the planning goals and objectives of the project which are:

- To improve travel conditions for transit riders to downtown Boston and to inner Cambridge;
- To decrease congestion at Harvard Square;
- To shape core land development forces by the careful design of fixed facilities, with considerations of equity among the communities involved;
- To effectively interconnect the feeder and line haul facilities to maximize convenience of transit travel;
- To gain a major transit interface with the highway system in order to divert as many cars as possible from the core area street network.

The no-build option does not meet any of these criteria, and has been rejected in favor of the proposed Red Line Extension project. With the 1971 decision not to construct additional expressways in the Northwest Corridor inside of Route 128, the Red Line Extension is considered an essential ingredient in the corridor's transportation network.

RED LINE ALIGNMENTS: HARVARD SQUARE TO ALEWIFE

A number of alignments were considered for the Red Line Extension between Harvard Square and Alewife. This section describes the basis for the selection of the recommended alignment. Detailed discussions of types of construction and more refined station location analyses was presented in previous chapters.

A physical description of each of the four alignments will be presented and the major advantages and disadvantages will then be summarized. Since all the alignments would have stations at Harvard Square and Alewife, issues pertaining specifically to these stations are not discussed in this chapter. However, certain issues in the Harvard Square and Alewife areas do distinguish among the alternative physical alignments such as the comparative congestion at Harvard Square and the location of the potential link with the Fitchburg commuter line; these issues are discussed in this chapter.

For the purposes of this discussion, the four alignment alternatives will be referred to as:

1. Harvard Square-Alewife
2. Harvard Square-Porter Square-Alewife
3. Harvard Square-Davis Square-Alewife
4. Harvard Square-Porter Square-Davis Square-Alewife

Harvard Square - Alewife

This alternative would consist of a direct tunnel from Harvard Square to Alewife. The tunnel would follow the existing MBTA tunnel and Mt. Auburn Street to Story Street, passing under the area west of Harvard and Brattle Squares, and continuing under Garden Street, St. Peter's Field and the Cambridge City Dump to Alewife.

The Harvard Square-Alewife alternative would have the following advantages:

- Least expensive to construct since it is the shortest alignment and would thus have the fewest new stations.
- No inconvenience at Porter and Davis Squares resulting from station construction.
- Opportunity for a potential link at Alewife with Fitchburg commuter rail service.

The Harvard Square-Alewife alternative would have the following disadvantages:

- No improvement in the level of service for the majority of Cambridge and Somerville residents.
- Only minimal potential for pedestrian, bicycle and kiss-and-ride access to the Red Line.
- Possible negative impacts to St. Peter's Field in Cambridge due to settling and also from dust and the release of methane gas from the Cambridge dump during construction.
- Fewest number of new riders attracted to public transportation.
- No opportunities for connection with commuter rail service at Porter Square.

- Least effective in relieving congestion in Harvard Square.

H a r v a r d S q u a r e - P o r t e r S q u a r e - A l e w i f e

This alternative would begin with a tunnel at Harvard Square running under Massachusetts Avenue to a station at Porter Square. From Porter Square, the tunnel would run under the Fitchburg Division right-of-way to a station at Alewife.

The Harvard Square-Porter Square-Alewife alternative would have the following advantages:

- Pedestrian access to a Red Line Station for the densely populated North Cambridge and West Somerville areas.
- Increased pedestrian, bicycle and kiss-and-ride access to the Red Line.
- Pedestrian access to the Porter Square area, which has a large elderly and student population.
- Improved service for bus passengers from Somerville and Arlington.
- Opportunity for substantial rerouting of Cambridge and Somerville bus lines to provide improved coverage.
- Reduced traffic at Harvard Square by intercepting Massachusetts Avenue bus routes.
- Increased non-automobile access to Porter Square retail area.
- Minimal environmental impact due to location of alignment on existing streets and railroad rights-of-way.

- Least impact on Cambridge historic structures during construction (same impact with Alternatives 3 and 4).

The Harvard Square-Porter Square-Alewife alternative would have the following disadvantages:

- More expensive to construct than Alternative 1.
- Inconvenience to Porter Square during station construction.
- No rapid transit service for Somerville.
- Congestion in Porter Square created by bus and kiss-and-ride patrons from Cambridge, Somerville and beyond.
- Neighborhood opposition to use of Fitchburg right-of-way for transit line.
- Inconvenient link with Porter Square commuter rail station.

H a r v a r d S q u a r e - D a v i s S q u a r e - A l e w i f e

This alternative would begin with a tunnel under Massachusetts Avenue following the same route as Alignment 2 as far as Porter Square. The alignment would then continue on to Davis Square, where it would turn west and proceed along the Freight Cutoff tracks of the MBTA South Acton Commuter Rail Line. New stations would be built at Davis Square and Alewife.

The Harvard Square-Davis Square-Alewife alternative would have the following advantages:

- Pedestrian access to a Red Line station from the densely populated Davis Square and Somerville areas and parts of North Cambridge.

- Increased pedestrian, bicycle and kiss-and-ride access over Alternatives 1 and 2.
- Increased service area including more of mid-Somerville and Medford than Alternative 2.
- Pedestrian access for a substantial portion of Somerville's low income residents.
- Improved service for bus passengers from Somerville and beyond who would like a Red Line connection.
- Greater flexibility in providing bus service for Green Line connections and internal Somerville trips.
- Reduced congestion in Porter and Harvard Square by diverting bus traffic to Davis Square.
- Stimulus for Davis Square retail area in accordance with local planning goals.
- No disruption to Porter Square during station construction.
- Least impact on Cambridge historic sites during construction (same impact with Alternatives 2 and 4).

The Harvard Square-Davis Square-Alewife alternative would have the following disadvantages:

- No rapid transit service to North or West Cambridge.
- Increased congestion in Davis Square due to feeder buses from Arlington, Cambridge and Somerville and kiss-and-ride vehicles.
- Inconvenience to Davis Square during station construction.

- No opportunity for links between Fitchburg commuter rail service and the Red Line at Porter Square.
- Decreased bus service on Massachusetts Avenue due to reroutings to Davis Square and Alewife.
- Increased pressure for new housing and development in the Davis Square area.
- Possible construction impact on Russell Field.

Harvard Square - Porter Square - Davis Square - Alewife

This alignment would be the same as Alternative 3 except that there would be an additional station at Porter Square. The Harvard Square-Porter Square-Davis Square-Alewife alignment would have the following advantages:

- Rapid transit stations to serve the densely populated areas of Porter Square in Cambridge, and Davis Square in Somerville.
- Maximum access for pedestrian, bicycle and kiss-and-ride patrons.
- Greatest number of new riders attracted to public transportation.
- Maximum dispersion of bus and kiss-and-ride congestion.
- Highest level of feeder bus service for Cambridge, Somerville and beyond with choice of utilizing Porter Square or Davis Square stations.
- Excellent access to Fitchburg commuter rail service at Porter Square.
- Development potential shared by Cambridge and Somerville.

- Least impact on Cambridge historic sites during construction (same impact with Alternatives 2 and 3).

The Harvard Square-Porter Square-Davis Square-Alewife alternative would have the following disadvantages:

- Inconvenience to Porter and Davis Squares during station construction.
- Most expensive to construct.
- Longest line haul time from Alewife to Harvard Square.
- Possible construction impact on Russell Field.

Ridership and Cost Comparisons

The four alignments were discussed in the order of ascending operating costs, with Alternative 1 being the least expensive. The order of discussion was also related to ridership figures as Alternative 1 would attract the fewest new transit passengers. Table IX-2 illustrates comparative cost and ridership figures for the four alternatives. Table IX-3 gives projected ridership figures.

Community Issues

Community concerns played a major part in the decision to define the Red Line Extension project as the Harvard Square-Porter Square-Davis Square-Alewife alignment. The BTPR Study included an extensive community involvement effort. Opportunities to participate in the study were available through working committees at local and regional levels, general public meetings, and consultations with staff. The City of Somerville went on record as early as May 18, 1972, with the following resolution: "That the Somerville Board of Aldermen in session assembled do hereby express our deep concern and wish to impress upon the Massachusetts Bay Transportation Authority that we are in favor of having a rapid transit station in Somerville and of having the Red Line, when it is constructed from Harvard

Table IX-2

COST AND RIDERSHIP ESTIMATES

	(A) increase in ridership over no- build (percent)	(B)* operating-main- tenance expenses/ year (million \$)	(B/A)** revenue/ costs met by revenue (percent)	(C) user*** benefit (million \$)	C (Total Cost) user benefits as*** compared to total costs \$ (capital and operating)
1. Harvard Square-Alewif	18	2.9	2.4	11.2	1.05
2. Harvard Square-Porter Square-Alewif	38	3.6	3.0	16.0	1.16
3. Harvard Square-Davis Square-Alewif	40	4.1	3.1	13.9	0.93
4. Harvard Square-Porter Square-Davis Square- Alewife	51	4.4	3.4	16.7	1.05

* Assuming a \$0.50 fare for Alewife, \$0.25 for all other stations.

** These relate very favorably to the figure of 32.6%, the proportion of all 1974 MBTA operations met by revenue.

*** This figure is obtained by adding the annual number of hours saved by all passengers using the given alternative over present transportation methods, and multiplying that by \$3.00/user hour.

Table IX-3

PROJECTED 1980 RIDERSHIP

Alignment	Harvard Square	Stations		Davis Square	Alewife	Total Rider- ship (Harvard Square to Alewife)	Percent Decrease at Harvard Square	New Riders-	
		Porter Square	Alewife					Percent Increase	Compared to Present Harvard Square Boardings
Existing	24,500	--	--	--	--	24,500	0	0	0
1. Harvard Square - Alewife	16,100	--	--	--	12,700	28,800	34	18	18
2. Harvard Square - Porter Square - Alewife	11,100	11,100	--	--	11,700	33,900	55	38	38
3. Harvard Square - Davis Square - Alewife	12,800	--	9,900	--	11,700	34,400	48	40	40
4. Harvard Square - Porter Square - Davis Square - Alewife	11,100	6,200	8,100	--	11,700	37,100	55	51	51

Source: CTPS, July 1975

Square to Alewife Brook Parkway, extended into the Davis Square area,..." The major reasons for Somerville's support of an alignment and station in the Davis Square area were:

1) Somerville pays the third highest deficit of all 79 MBTA communities, yet Somerville residents must often pay double fares and change buses for intercity travel; and 2) Due to the lack of parking at Davis Square--Somerville's largest shopping area--improved transit accessibility is needed.

At the end of the BTPR Study, public hearings were held in Somerville, Cambridge and Arlington. At the Somerville hearing, April 25, 1973, overwhelming support was displayed for a Davis Square Red Line station. The station received unanimous support at the afternoon sessions, which featured testimony by representatives of the Somerville Conservation Commission, Tufts University, the Davis Square Businessmen's Association, and the Somerville Chamber of Commerce. At the evening sessions the Davis Square Station was supported by more than two to one; all organizations represented supported the station including the Somerville Ward 6 Civic Association, the James A. Logan VFW Post, the Somerville Citizens for Participation in Politics, and the Greater Boston Committee on the Transportation Crisis.

Discussions at the May 1, 1973 public hearing in Cambridge were directed more towards determination of the Red Line terminal point--Alewife, Arlington Heights, or Route 128--than towards the station locations between Harvard and Alewife. Most of those persons who addressed the issue of station location favored stations at Porter Square and Davis Square. However, the Cambridge Chamber of Commerce favored the Harvard Square-Alewife alignment, not because of opposition to stations at Porter Square or Davis Square, but because it favored construction of the extension as quickly and as inexpensively as possible. Organizations supporting the Porter Square and Davis Square stations included the Cambridge League of Women Voters, Citizens for Rail Transportation (Fitchburg Branch), Cambridge Democratic Committee, Sierra Club, the Greater Boston Committee on the Transportation Crisis, and the Cambridge Corporation.

At this hearing, Councilor Francis H. Duehay read a resolution that was unanimously passed by the Cambridge City Council the previous evening. The resolution, which endorsed the April 1973 reports and recommendations of the City's Planning and Development and Traffic and Parking Departments stated that the City Council was "supporting the concepts of a Red Line Extension because it can help produce more jobs and tax revenue, reduce the need for expressway construction in Cambridge, reduce the need for commuter parking in Cambridge, increase employment opportunity for Cambridge residents, reduce commuter traffic on Cambridge streets, reduce the number of buses on Cambridge streets, reduce the City's annual payment to the MBTA..." The Council endorsed the Davis Square station and qualified an endorsement of the Porter Square station with the provision that "stringent parking and traffic conditions can be met..." A discussion of how these conditions were addressed by the Porter Square Task Force is presented in Chapter VII. Based on this work, the Cambridge City Council endorsed the Porter Square station on June 23, 1975.

In general, the areas of Somerville and Cambridge that would most directly benefit from stations at Porter and Davis Squares have large and growing elderly and student populations. Both groups are more dependent on public transportation than the general public. Likewise, lower income persons are more dependent on transit than persons with high incomes and the Porter and Davis Square areas also contain a higher proportion of lower income persons than other parts of those cities. Another reason for support of the Porter Square and Alewife stations is that both of Cambridge's high schools are located near Harvard Square and thus access for student via public transportation would be improved.

Thus, the alignment from Harvard Square to Alewife with intermediate stations at Porter and Davis Squares is supported by the community as well as the technical analysis.

On January 23, 1974, Alan Altshuler, Secretary of Transportation and Construction, and John T. Doolittle, Jr., Chairman of the MBTA, acting on behalf of the Governor, announced the proposed route for the Red Line Extension. This route would proceed up Massachusetts Avenue to Porter Square and Davis Square to Somerville and then, utilizing existing railroad right-of-way, would proceed through North Cambridge to the Alewife Brook area, and then on to Arlington Heights.

The Harvard Square-Porter Square-Davis Square-Alewife alignment was incorporated in the 1974 and 1975 Transit Development Programs, prepared by the EOTC and the MBTA and reviewed and endorsed by the Joint Regional Transportation Committee as part of the transit plan and program for the region.

BEYOND ALEWIFE: ALIGNMENT AND TERMINAL POINTS

Background Travel Data

The available travel demand data for the Alewife terminal option indicate a desire for some form of improved transit service beyond Alewife, penetrating further into the Northwest Corridor. Of the three proposed new stations, Alewife would have the greatest number of 1980 daily boardings, but the smallest percentage of walk-in riders. Only 17 percent of Alewife riders would walk to the station as compared to 27 percent of the Porter Square riders and 33 percent of the Davis Square riders. The remaining Alewife patrons would arrive at the station via kiss-and-ride, park-and-ride or bus. It appears, therefore, that a substantial portion of the Alewife station's potential patronage might be better served by extending the rapid transit line further, thus intercepting potential trips earlier. Demand estimates used in the previous discussion of alignment alternatives to Alewife were based on the assumption that a maximum of 2,000 parking spaces would be provided at Alewife. This would be the maximum capacity consistent with the size of the site, the surrounding highway layout, local land use plans, and community policy positions. A 2,000-car garage would be larger than any existing MBTA Parking facility; there is only one garage in Metropolitan Boston that is larger. However, demand estimates indicate that if unlimited parking was provided at Alewife, over 800 additional spaces could be filled in the morning peak hour alone. Over the course of the day, there would be a demand for an additional 1,400 spaces. Some of this demand could be met by the turnover of spaces during the day, but this turnover capacity would probably not exceed five percent of the total spaces. Assuming an average occupancy of 1.2 passengers per automobile, the shortage of parking spaces would translate to a loss of up to 1,000 peak-hour park-and-ride patrons and up to 2,000 off-peak park-and-ride users. Although some of these

potential park-and-ride patrons would instead use bus service or be dropped off by auto at Alewife, it is predicted that over 90 percent of these persons would probably drive all the way to their final destinations. In short, it is clear that there is a demand for some form of improved transit service beyond Alewife.

Alignment Options

There are three possible alignments for an extension of the Red Line beyond Alewife utilizing existing rights-of-way: Massachusetts Route 2, the MBTA Fitchburg Main Line and the MBTA Lexington Branch. These are discussed below.

Route 2

Route 2 follows almost a direct line between Alewife and Route 128, and would thus be the shortest connection to Route 128 of the three alignments. Route 2 has sufficient capacity to accommodate present and future traffic volumes. If the two center lanes were removed and replaced by transit tracks the highway capacity would still be adequate. However, the right-of-way that could be freed for transit use would be narrow based on construction standards established for clearance of the Red Line cars. The existing grades along much of this section of Route 2 are too long and steep for rapid transit cars, and therefore a large amount of excavation would be required. Aside from the engineering problems, the Route 2 alignment is undesirable because it does not pass through any significant population concentrations or commercial centers, and therefore has little potential for attracting walk-in riders.

The Railroad Alignments

Of the two railroad alignments beyond Alewife, the Lexington Branch would much better meet the goals of extending transit beyond Alewife. The Lexington branch bisects the town of Arlington, closely paralleling heavily-traveled Massachusetts Avenue. More than one-third of the peak-hour riders who would be attracted to Alewife--by all access modes--if Alewife had unlimited parking would either originate within Arlington or would travel over Arlington streets enroute to Alewife. Although the Fitchburg route bisects the Town of Belmont, less than one-fourth of all potential

peak-hour Alewife riders would originate in Belmont or travel over Belmont streets enroute to Alewife. If rapid transit service were extended beyond Alewife all the way to Route 128, the Lexington Branch would provide a much more favorable interception point than would the Fitchburg Main Line. The Lexington Branch intersects Route 128 three miles north of Route 2 and two miles south of Route 3. The Fitchburg Main Line intersects Route 128 seven miles south of Route 2, and only two miles north of the MBTA's existing Riverside terminal.

The Lexington Branch is currently used by one round trip passenger train each day (weekday only) and by a local freight train which serves approximately 12 shippers. If this route were used for a rapid transit extension, passenger service could be discontinued without significant inconvenience since ridership is small. Freight service could be continued, if necessary, by joint use of trackage at night, but only if the Red Line Extension is at grade through Arlington. By contrast the Fitchburg route is the Main Line of the MBTA Commuter Rail between Boston and areas to the West. The line serves numerous through and local freight trains each day and provides frequent commuter service used primarily by riders from communities outside Route 128. The right-of-way could not be used for rapid transit unless major changes are made in MBTA freight operations and commuter service is discontinued, or unless separate tracks are provided for railroad and rapid transit operations. The latter option would greatly increase construction costs for this route, whereas the former option would have strong disbenefits for present users of rail passenger and freight service.

In summary, the MBTA Lexington Branch would be the most desirable route for extending rapid transit beyond Alewife in terms of ridership potential, ease of construction and minimization of negative impacts on existing railroad services. It is assumed that the Fitchburg Main Line would continue to provide freight and commuter railroad service to North Station, with a transfer to the Red Line Extension at Porter Square.

Terminal Options

Several terminal options are examined in the following section: Alewife, Arlington Heights, and Route 128 in Lexington.

For purposes of project definition, Route 128 was considered the ultimate terminal point for the Red Line Extension. This is in response to policy positions established by the Cities of Cambridge and Somerville and the Town of Arlington. The MBTA is currently sponsoring the Minuteman Area Transit Study (MATS) to assess the potential for extending the Red Line beyond Arlington Heights. This Environmental Impact Statement assumes that the Red Line terminal would be at Arlington Heights. Of those alternatives considered in detail in this EIS, Arlington Heights is the preferred terminal based on potential ridership. A terminal at Route 128 would not appreciably increase negative impacts within the area covered by this report. However, due to the limitation of funds, it is assumed that the project would be constructed in phases, beginning with the Harvard Square-Alewife section, continuing with the section to Arlington Heights and then proceeding to Route 128 if projected patronage levels warrant such an extension.

Alewife Terminal

Locating a permanent Red Line Extension terminal at Alewife would not satisfy the demand distribution pattern for the Northwest Corridor. Forecasts for 1980 (earliest opening day) indicate approximately 9,000 boardings at the two Arlington stations. This concentration of demand is among the highest of any station planned outside of the regional core. The combined volume at these two stations is higher, for example, than the existing combined volume at the Kendall Square and Charles Street stations, and only slightly lower than the combined volume at the Kendall Square and Central Square stations.

The demand for parking at Alewife would exceed the capacity of a 2,000-car garage to accommodate all patrons who would like to park at the Alewife Station. Data for 1980 indicate that this garage would become filled during the morning peak hour--when the heaviest traffic volumes occur. Lack of parking supply usually results in higher levels of kiss-and-ride patronage as well as in the loss of some transit ridership. A similar situation is presently occurring at Quincy Center station.

The Alewife terminal option would result in the most serious congestion problem of any of the options discussed in this chapter. The addition of 350 parking spaces in Arlington Heights under those alternatives which extend the Red Line to Arlington Heights, would relieve the congestion at the Alewife station. This is not to say that the problem of limited parking relative to demand at Alewife would be totally alleviated by an extension through Arlington, or even all the way to Route 128. The data indicate that even with an extension to Arlington, the Alewife garage would be filled around 9:00 a.m. after the end of the peak-hour. However, all options which propose an extension of transit service beyond Alewife with the exception of feeder buses on city streets would be superior to the Alewife terminal option in terms of access-oriented congestion, and accommodating potential demand.

The actual extent of congestion attributable to transit access would depend more on the configuration of the new roadway system at Alewife, however, than on the degree of transit extension beyond Alewife. The Massachusetts Department of Public Works has proposed a transit access roadway configuration which would maximize direct access to the garage/station facility from every major direction and which would minimize conflicts with other traffic flows. This roadway configuration has been planned to minimize to the greatest extent possible the congestion that would be generated by a major transit facility. A number of other roadway schemes are currently under study by the Massachusetts Department of Public Works with emphasis on providing adequate access to the transit station.

Nevertheless, concern about congestion associated with a permanent terminal at Alewife has been a major issue for the local governments involved, and is a major reason for community support of the extension of improved transit service beyond Alewife. As recently as June 1975, the Cambridge City Council passed a resolution (primarily concerning the Porter Square station location) which stated that the Council's support was "contingent upon the finding that the Red Line will be carried to Route 128, and that construction of the segment running northwest from Alewife Brook will begin no later than the construction between Davis Square and Alewife Brook."

The state and local governments involved have agreed on the rejection of Alewife Brook as the permanent Red Line terminal as reported in the 1974 and 1975 Transit Development Programs. This decision was based on the desire to serve the additional ridership that would be generated by extension beyond Alewife; to increase the total number of park-and-ride spaces being provided, and to conform to the development goals of the Town of Arlington. Nevertheless, when considering constraints imposed by the availability of capital funds for project construction, the possibility of Alewife as an interim terminal does exist. The designation of Alewife as a terminal for a certain period of time, based on financial considerations, would be acceptable in terms of transportation service. User demands on Alewife would be great but not unmanageable. Such a fiscally-based decision would make it essential that the state and the affected communities develop and implement regulatory policies to allocate a scarce commodity--parking spaces at Alewife--such that transportation objectives would be achieved in the most consistent manner possible. Such regulatory policies, which would require examination over the next several years, include a "first-come-first-serve" policy as well as:

- Increases in parking charges at Alewife significantly higher than the 75 cents per day currently charged at the parking garage at Quincy Center Red Line station.
- Reservation of certain sections of the garage for off-peak use.
- Regulation of admittance to the garage i. e. , during the morning peak hour first admitting those automobiles containing two or more persons.
- Development of expanded feeder bus service.
- Combinations of the above, and development of other viable options.

All of these options would have to be considered to some extent if the Red Line is initially extended to Alewife. Therefore, further study of these options is needed regardless of the final decision on an interim terminal.

Arlington Heights Terminal

A Red Line terminal at Arlington Heights would attract 5,500 more riders per day than a terminal at Alewife. This would include 350 park-and-ride patrons at the Arlington Heights Station. About half of these would be patrons who would use Alewife if parking were available there and the rest would be patrons attracted to the new stations but not to Alewife. The remaining ridership would consist of 2,200 kiss-and-ride patrons and 2,500 walk-in and bus patrons, none of whom would use an Alewife station. There would be no decrease in the number of park-and-ride patrons at Alewife because potential demand there would still exceed the parking supply. About 50 percent of the patrons from Arlington who would take buses to Alewife if the rapid transit line ended there would walk either to Arlington Heights or Arlington Center if rapid transit is extended to Arlington Heights. However, an equal number of persons who would consider Alewife too far away by bus, would use bus service to Arlington Center or Arlington Heights; therefore, total bus ridership would not change. The Arlington stations would not attract walk-in patrons from outside of Arlington, but about 1,800 daily bus riders from various communities would transfer at Arlington Center or Arlington Heights instead of at Alewife.

Route 128 Terminal

The BTPR Study examined the option of extending Red Line rapid transit service to Route 128 in Lexington as part of the proposed project. Two factors have influenced the decision to define the proposed project in this study as extending only to Arlington Heights. First, ridership projections indicate that while the market area beyond Arlington is significant, it may not justify the expense of third rail rapid transit. Second, the Town of Lexington formally took the position that the issue of the optimal transit investment in the outer Northwest Corridor should be investigated in a study completely devoted to the needs of that area.

The MBTA and the EOTC agreed with the necessity to take that area out of the corridor analysis and examine it in a separate study. The Minuteman Area Transit Improvement Study is currently underway. The study is reviewing all data relative to the justification of a further Red Line extension in that area in addition to conducting a full analysis of the available alternatives. For these reasons, therefore, the proposed project description was established in terms of transit improvement to Arlington Heights.

Operating Costs

Annual operating and maintenance costs for rapid transit service to Arlington Heights would be approximately \$2.5 million more than for rapid transit service to Alewife. Assuming an adult fare of 50 cents at Arlington Center, Arlington Heights and Alewife, approximately \$1.6 million in additional revenue would be collected per year; this would amount to 64 percent of the incremental cost, twice the revenue-to-cost ratio for existing MBTA service. Additional revenues would be generated if a zonal fare system were adopted. Changes in costs for bus operations have not been included here since decreases in operating miles to existing service areas are usually offset by increases in operating miles to new service areas. The increase in user benefits for extension of rapid transit service from Alewife to Arlington Heights would not be as dramatic as the initial increase from Harvard Square to Alewife, but it would be approximately equal to the increase in operating and maintenance costs.

Summary

Extension of Red Line service beyond Alewife is desirable in terms of maximizing absolute levels of user benefits, conformance with local land development goals and objectives, maximizing ridership, and decreasing reliance on Alewife for the automobile (park-and-ride or kiss-and-ride) access to the Red Line. Although extension of the project beyond Alewife would not afford cost/benefit characteristics as positive as the initial Harvard Square to Alewife section, it does represent a desirable element of the total project as defined by the northwest planning process and is supported by a broadly-based local consensus.

Mode Alternatives Beyond Alewife

The preceding section discussed the costs and benefits of extending rapid transit service from Alewife to Arlington Heights along the Lexington Branch right-of-way. This same alignment, however, could be used by several alternative modes, specifically: commuter rail, light rail, and bus on exclusive busway. All three of these modes could provide feeder service to Red Line extension with a terminal at Alewife. The commuter rail option could also provide service to North Station as currently provided by the single daily train on the Line.

C o m m u t e r R a i l S e r v i c e B e y o n d a n A l e w i f e T e r m i n a l

Improvements to MBTA Lexington Branch service would include provision of transfer stations at Alewife and Porter Square and would require cooperation with the railroad in the scheduling of freight trains. Fitchburg Division trains would interface only at the Porter Square Station.

There are many constraints to the institution of even hourly rail service. At Arlington Center the tracks cross Massachusetts Avenue and Mystic Street at grade. This is the most heavily trafficked intersection in the entire town. Passenger stations and facilities are inadequate; the present rail line is single track and is in deteriorated condition; it is unsignalized over its entire length; and the line crosses seven streets at grade between Alewife and Arlington Heights and nine streets between Arlington Heights and Route 128. Due to lack of adequate crossing protection devices, MBTA Commuter Rail operating rules require the trains to come to a full stop at five crossings in Arlington and five crossings in Lexington, and to approach all other crossings at reduced speed, prepared to stop.

The Commuter rail alternative evaluated consisted of expansion of the existing MBTA Commuter Rail service to provide adequate peak-hour service, and at least hourly service during off-peak periods, between Arlington Heights and North Station. Freight service would be maintained along the line.

The following improvements are part of the commuter rail alternative:

- Grade Separation at Massachusetts Avenue.
- Construction of a second main track between Alewife and Arlington Heights complete with crossovers and freight sidings.
- New rails, ties and ballast.
- Signalization of both tracks.
- Station, platform and shelter improvements.
- Installation of flasher lights and crossing gates at all proposed grade crossings.
- Security fencing on each side of the right-of-way due to the frequent operation of trains on the Lexington Branch.
- Maintenance of service to New England Farms and Brigham's near Arlington Center would require at-grade freight service in the area of Arlington Center.

Double tracking of the branch would require that the existing bridges be upgraded, and that the span of most overhead bridges be lengthened to allow for construction of the second track below. At one time the line was double tracked from near Alewife to Lexington, but a field inspection indicates that track centers must have been spaced at less than present standards. Considerable regrading would be needed to restore two-track service.

There are two alternatives for grade separation of the Massachusetts Avenue intersection at the Arlington Center area:

- Commuter rail service operating under Arlington Center between Whittemore and Mill Streets and freight operating at grade. Commuter rail service would operate at or beyond the maximum gradient of three percent. This alternative would cost \$18.6 million more than an at grade station scheme at the Arlington Center (1975 Dollars).
- Commuter rail and freight service under the Arlington Center area between Whittemore and Grove Streets. This alternative would require significant land takings between Mill and Summer Streets; create possible operational gradient problems for freight (2 to 2.5 percent grades), and require long lay-up tracks to service Brigham's and New England Farms. It would result in a cost of \$24.1 million over an at-grade scheme through Arlington Center (1975 Dollars).

Proper signalization of all grade crossings would be of the utmost importance due to the high-speed service proposed. Although at-grade construction with the exception of Arlington Center would be contrary to the stated goals of several of the communities, it is the preferred commuter rail alternative since construction of a completely grade-separated alignment for RDC service would cost approximately the same as the Red Line Extension, but would not provide a comparable level of service.

Even with improved crossing protection, it would be necessary to maintain speed restrictions at several crossings due to limited approach visibility. These speed restrictions, combined with slower acceleration characteristics of commuter rail equipment, would result in longer running times than those of a grade-separated rapid transit line--three minutes longer from Alewife to Arlington Center and five minutes longer from Alewife to Arlington Heights. Passengers bound for Cambridge would have to transfer from commuter rail to rapid transit at Alewife or Porter Square, increasing travel time by at least four minutes during peak hours.

A commuter rail shuttle from Arlington Heights to Alewife with peak period headways of 4 minutes would be used by an estimated 7,200 passengers each way per day--80 percent of those who would

use rapid transit. These passengers would experience longer trip times: In addition to stations at Arlington Heights and Arlington Center, commuter rail service could continue to make stops at Lake Street and reactivate service at a former stop--Brattle Street in Arlington. Stations at these sites would be used almost exclusively by walk-in patrons. However, the proximity of Massachusetts Avenue, with its frequent bus service would reduce the potential walk-in market for any stations along the Lexington Branch. Bus service would be maintained on Massachusetts Avenue in any case, although service frequency would be somewhat reduced if commuter rail is initiated along the railroad alignment. Since walk-in patrons account for only about one-fourth of the projected demand for rapid transit to Alewife, any mode other than rapid transit would increase the relative advantage of Massachusetts Avenue bus service.

Estimated annual operating and maintenance costs for commuter rail shuttle from Alewife to Arlington Heights would be approximately \$1.8 million, based on 1974 costs as compared to approximately \$2.5 million for rapid transit. See Table IX-6. Thus the commuter rail shuttle would serve 80 percent of the demand at 72 percent of the operating costs. Due to the longer running time for commuter rail, incremental travel time savings as compared to those with a Red Line terminal at Alewife and no exclusive feeder service to the terminal would be only \$.71 million per year. This is \$1.8 million per year less than the user benefit for rapid transit, but operating cost is reduced by only \$0.7 million per year.

Commuter rail service from Arlington Heights to Alewife running through to North Station would serve an estimated 7,600 riders each way per day--approximately 800 more persons than with a commuter rail shuttle to Alewife. Of these, 6,100 would transfer to the Red Line at Porter Square and 1,500 would remain on trains to North Station. From a time standpoint, Porter Square is slightly more attractive than Alewife as a transfer point because commuter rail trains would not have to stop at Davis Square. However, riders transferring to transit at Alewife would have a better chance of getting seats. Annual operating and maintenance costs for this commuter rail service would be \$3.1 million, but the increase in user benefits as compared with no service

beyond Alewife would be only \$0.1 million. This is less than the savings for a shuttle from Arlington Heights to Alewife because minimum headway would have to be increased due to merging problems with trains on the Fitchburg Main Line.

Estimated costs for construction of the improved commuter rail alternative with a grade separated station at Arlington Center are shown in Table IX-4. These estimates do not include the purchase of rolling stock, operating costs, or any improvements to facilities at North Station or beyond Arlington Heights.

L i g h t R a i l S e r v i c e B e y o n d A n A l e w i f e T e r m i n a l

This alternative assumes that Light Rail Vehicle (LRV) service would replace the existing MBTA Commuter Rail service from Bedford to the Fitchburg Main Line tracks at Alewife. Based on the scope of this report, the LRV alternative assumes that Arlington Heights would be a temporary terminus.

The Light Rail Vehicle (LRV) alternative would operate over a double track similar to that required for the improved commuter rail alternative. The line would be constructed at grade except at Arlington Center where the station area would be underneath Massachusetts Avenue. The LRV cut-and-cover tunnel would extend from just south of Swan Place to a portal just beyond Water Street. At-grade crossings would be at Lake, Linwood and Mill Streets with possible grade crossings in the Alewife area dependent on the final location of garage and surrounding roadways. New signalization would be installed at all grade crossings and along the entire line to permit higher operating speeds. All existing structures would require reconstruction to accommodate two tracks. Overhead catenary wires would provide power for LRV operation and would be high enough for proper clearances when freight trains are using tracks.

Table IX-4

ESTIMATED CONSTRUCTION COSTS
IMPROVED COMMUTER RAIL
ALEWIFE TO ARLINGTON HEIGHTS
(GRADE SEPARATED AT MASSACHUSETTS AVENUE)
(1975 Dollars)

Line Costs

Trackwork	\$ 2,190,000
Signaling	525,000
Street Reconstruction	50,000
Switches	200,000
Crossings	75,000
New Bridges	1,910,000
Fencing	611,000
Remove Existing RR Track	244,000
Subtotal	\$ 5,805,000
Other Projects Costs	1,450,000
TOTAL	\$ 7,255,000

Station Improvements Costs

Alewife Transfer Sta.		\$ 200,000
Arlington Center Sta. (Grade Separated)	\$18,950,000 to	24,450,000
Garage @ Arlington Center		1,840,000
Arlington Heights Sta.		350,000
Garage @ Arlington Heights		1,840,000
Subtotal	23,180,000 to	28,680,000
Other Projects Costs	5,795,000 to	7,170,000
TOTAL	28,975,000 to	35,850,000

Summary

Line Costs	\$ 7,255,000
Station Improvement	\$28,975,000 to 35,850,000
TOTAL	\$36,230,000 to \$43,105,000

Freight operations would take place during the early morning hours before commuter operations begin. Numerous crossovers and turnouts would be constructed to afford freight access on both sides of the tracks. Freight operations would be at grade through Arlington Center due to the high--four percent--gradient that would be required for an alignment passing under Arlington Center to reach existing grade at Mill Street. Since freight operations would take place in the early morning, the impact on traffic and the local community at Arlington Center would be minimal.

Station complexes at Arlington Center and Arlington Heights would be similar to those proposed with Red Line service. Intermediate stations at Lake and Brattle Streets would be constructed with the Alewife Station incorporated into the Red Line Extension project.

An LRV maintenance and storage facility would be constructed between the Alewife Station and the Fitchburg Main Line tracks. The yard would have capacity for 30 vehicles with a shop for repair and maintenance of LRV's operating between Alewife and Arlington Heights.

Estimated costs for construction of the LRV alternative are shown in Table IX-5. These estimates do not include the purchase of LRV's or annual operating costs. Construction of this alternative from Arlington Heights to Bedford is beyond the scope of this EIA.

LRV service over the Lexington Branch would encounter many of the same operating problems faced by the upgraded commuter rail service alternative. LRV's can accelerate and decelerate faster than commuter rail equipment, and would therefore have slightly lower running times. LRV service would be two minutes longer than rapid transit to Arlington Center and 3.5 minutes longer to Arlington Heights.

An estimated 7,400 riders daily would use a light rail shuttle from Arlington Heights to Alewife each way. This is slightly more than the number of persons that would be attracted to commuter rail service.

Table IX-5

ESTIMATED CONSTRUCTION COSTS
LRV ALTERNATIVE
ALEWIFE TO ARLINGTON HEIGHTS
(1975 Dollars)

LRV Line Costs

Structures	\$ 5,137,600
Trackwork	2,350,500
Electrification	4,656,000
Signaling	640,400
Decking and Repaving	43,000
New Bridges	1,910,000
Fencing	553,000
Remove RR Track	244,000
Subtotal	\$15,534,500
Other Project Costs	3,883,700
TOTAL	\$19,418,125
	Say \$19,500,000

Allowance for LRV Maintenance and Storage Facility (Alewife)

Maintenance Shop	\$ 3,000,000
Yard Trackwork	615,000
Electrification	767,500
Subtotal	\$ 4,382,500
Other Project Costs	1,095,600
TOTAL	\$ 5,478,100
	Say \$ 5,500,000

Intermediate Stations

Lake Street Station	\$ 150,000
Brattle Street Station	150,000
Subtotal	\$ 300,000
Other Project Costs	75,000
TOTAL	\$ 375,000

Railroad Improvements Through Arlington Center

New RR Track	\$ 181,500
Signaling	89,000
Switches	26,400
Crossings	9,700
Fencing	37,700
Subtotal	\$ 344,300
Other Project Costs	86,100
TOTAL	\$ 430,400
	Say 431,000

Table IX-5 (Continued)

Arlington Center Station Complex

Station		\$ 5,860,000
Garage		<u>1,840,000</u>
Subtotal		\$ 7,700,000
Other Project Costs		<u>\$ 1,925,000</u>
TOTAL		\$ 9,625,000
	Say	\$ 9,625,000

Arlington Heights Station Complex

Station		\$ 1,655,000
Garage		<u>1,840,000</u>
Subtotal		\$ 3,495,000
Other Project Costs		<u>874,000</u>
TOTAL		\$ 4,369,000
	Say	\$ 4,370,000

LRV Line		\$19,500,000
Maintenance/Storage Facility		5,500,000
Intermediate Stations		375,000
RR Improvements		431,000
Arlington Ctr. Sta. Complex		9,625,000
Arlington Hts. Sta. Complex		<u>4,370,000</u>
TOTAL		\$39,801,000

Total Cost Alewife to Arlington Heights	Say	\$39,800,000
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Light rail vehicle service would achieve only slight cost economies by operation of cars in multiple unit trains rather than individually because one man per car would be needed in all cases, and the pay differential for a trailerman as compared to a motor-man is small. By contrast, commuter rail achieves significant economies when cars are run in multiple units because each train requires one engineer and one conductor plus a trainman for every two cars. Due to the labor requirements to meet the demand beyond Alewife, LRV service would probably be operated with single cars every four minutes during peak hours, while commuter rail service would have three-car trains every 7.6 minutes during peak hours. The longer headways with commuter rail service would result in somewhat smaller demand than light rail. More importantly, however, such headways would reduce user benefit to an insignificant level, whereas light rail would have annual user benefits of \$0.9 million. The annual operating and maintenance costs for a light rail shuttle would be \$1.3 million.

Exclusive Busway

Buses operating over an exclusive busway on the Lexington Branch right-of-way would have approximately the same running times as light rail vehicles. However, due to the small capacity of buses it would be necessary to provide more frequent service during peak hours to accommodate demand. This more frequent service would result in greater travel time savings than with light rail. About 7,600 riders each way would utilize exclusive busway service each day.

The extra vehicle miles covered by bus service would be more than offset by the lower maintenance costs for buses. Estimated capital cost for the exclusive busway is \$21,000,000 (1975 Dollars). Estimated annual operating and maintenance costs of exclusive busway service would be \$1.0 million; user benefits would be \$1.7 million greater than for an Alewife terminal with no feeder service on the railroad alignment. Unlike commuter rail, light rail or rapid transit, a busway would permit off-line collection and distribution as well as line haul service.

Summary

Of the alternative transit technologies potentially applicable beyond Alewife, the recommended project, as analyzed in this report, is the extension of Red Line service to Arlington Heights. Direct Red Line service to Cambridge and Boston was selected after the BTPR Study examined several alternatives:

1. Terminal at Alewife (Baseline)
2. Extension of Red Line service beyond Alewife
3. Exclusive busway service beyond Alewife
4. Commuter rail service beyond Alewife
5. Commuter rail service through to North Station

The less expensive right-of-way options, (bus, commuter rail and LRV) would require transfers at Alewife and would afford considerably less opportunity to positively impact the development activities of the Town of Arlington. This is true both in terms of the community objection to at-grade service in certain sensitive areas, and in terms of the accessibility to be created at the Arlington Center and Arlington Heights station areas.

The impact of the various alternative modes on the lack of parking at Alewife, as previously noted, has also influenced the decision to choose a Red Line Extension over a busway, or other at-grade shuttle/feeder options. The necessity of a transfer at Alewife to the primary line haul vehicle is considered a strong deterrent to the strategy to induce park-and-ride patrons, to park somewhere beyond the Alewife facility. This issue has been stressed by participants in the planning process throughout the corridor, particularly the City of Cambridge. The attractiveness of the new station to divert riders approaching by private vehicle was a major factor in the decision to recommend extension of direct transit service over the provision of improved feeder service.

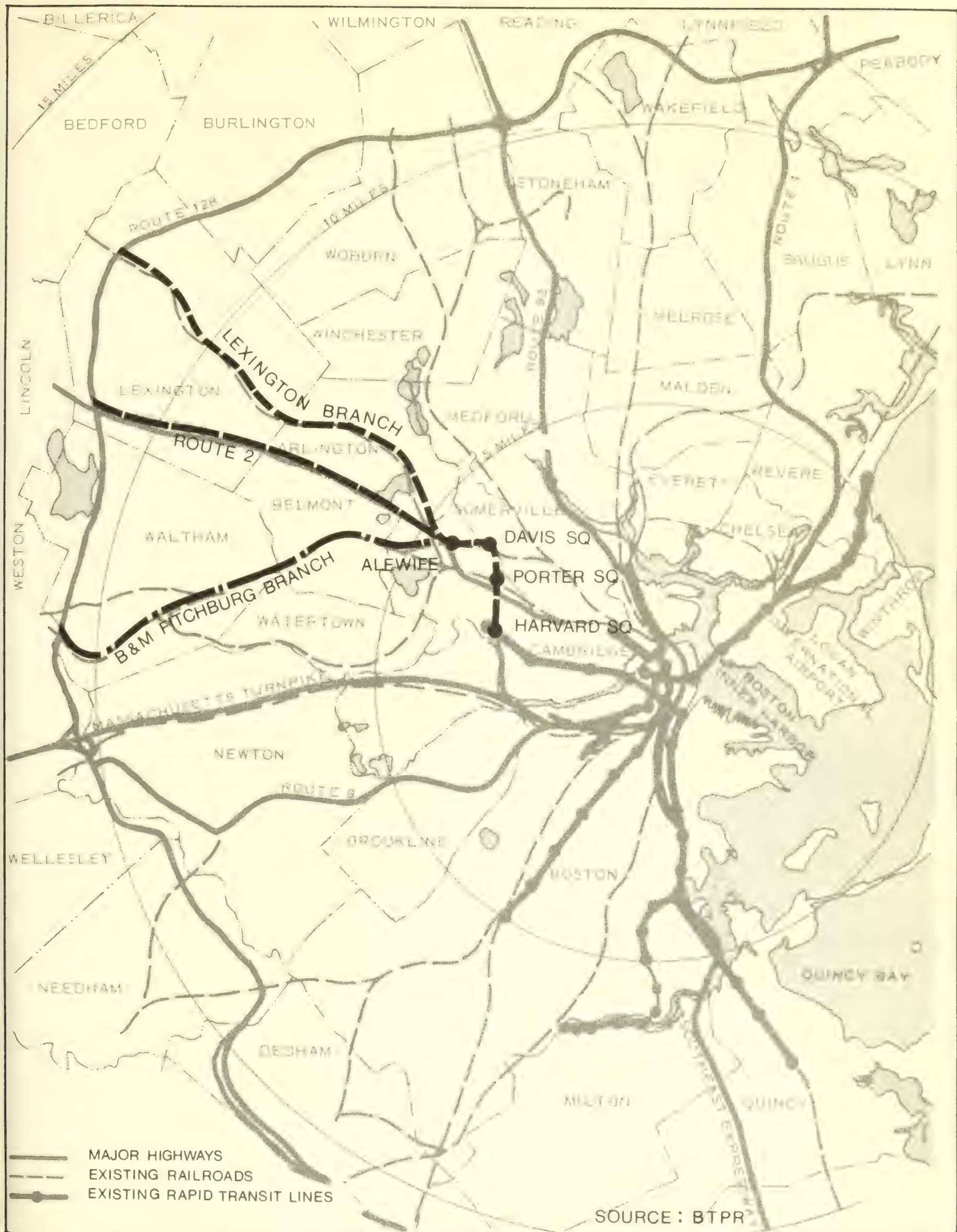
The BTPR report concluded that neither light rail nor commuter rail vehicles had as much potential for effective feeder/collection services as the feeder bus option or the extended Red Line option. Table IX-6 shows the evident superiority (in terms of transportation costs and benefits) of the busway and Red Line Extension over the other options.

Table IX-6

COMPARATIVE PROJECTED COSTS BY ALTERNATIVE

Alternative	Annual Operating Costs	Annual User Benefit	Annual Capital Cost-40 years	Benefit/ Cost Ratio
	(million \$)			
Alewife Terminal	Base	Base	Base	Base
Red Line Extension	2.46	2.51	4.95	.34
LRV Light Rail Shuttle	1.25	.90	2.25	.25
Commuter Rail Shuttle	1.83	.59	1.08	.25
Commuter Rail - North Station	3.07	.14	1.14*	.03
Exclusive Busway	1.03	1.74	1.20	.77

*Does not include improvement to North Station



Chapter X

UNAVOIDABLE ADVERSE IMPACTS AND MEASURES TO REDUCE THEIR SEVERITY

CHAPTER X

UNAVOIDABLE ADVERSE IMPACTS AND MEASURES TO REDUCE THEIR SEVERITY

The project would result in adverse impacts related to transit operations as well as construction.

Transit System Design and Operation

Operational impacts would be minimized since most of the selected alignment is located within existing transportation rights-of-way. However, the alignment would eliminate freight service on the Lexington Branch and the Fitchburg Freight Cutoff in the project area, adversely affecting businesses which depend upon that service for their shipping needs. Provisions have been made for layup tracks and adjacent loading areas for truck transfers to permit these businesses to complete their shipments. Although commuter rail service would be removed from the Lexington Branch and be replaced by rapid transit service, public transportation would be improved in that corridor.

The project may induce land use changes, particularly at the station areas; if uncontrolled, such changes would be incompatible with some present uses. Under the direction of the MAPC, and in cooperation with local agencies, land use planning activities have been designed to guide future growth and eliminate adverse impacts. Development of a linear park system, connecting major recreational resources from Alewife to Arlington Heights, would be one of the positive effects of these planning endeavors. Esthetic considerations would be incorporated into the station designs to avoid scale conflicts, visual intrusion and other disruptions.

Some unavoidable vibration impacts would result from transit operations. However, several vibration abatement techniques would be employed to reduce these impacts to acceptable levels, particularly where the transit alignment is near sensitive receptors. Details of these mitigating measures are given in the appropriate sections of Chapters III through VIII.

Construction Impacts

The major adverse impacts of construction would be air and noise pollution and traffic disruptions. Noise and vibrations would be monitored both on and off the construction site so that effective mitigating measures could be taken as soon as problems are detected. Contractors would be required to comply with noise abatement requirements such as exhaust mufflers, sound absorptive housing for machinery and so forth. Protective measures such as underpinning would be implemented near structures where settling is anticipated or observed.

Air pollutant emissions during construction result from three principal sources: (1) exhaust emissions from construction equipment; (2) excess exhaust emissions resulting from rerouting of motor vehicles and from traffic congestion; and (3) re-entrained dust from movement of construction equipment and wind erosion from aggregate storage. Control of these sources is generally based on the following measures:

- Heavy construction equipment is generally diesel-powered so exhaust hydrocarbons and carbon monoxide emissions are greatly reduced compared to gasoline-powered vehicles.
- Considerable effort must be exerted in the routing of traffic during construction to ensure that congestion and other dislocations are minimized.
- Any roadways from which construction activity might result in airborne particulate matter should be wetted on a regular basis.
- Covers should be placed over aggregate piles from which materials might be blown. In transit, such materials should be transported in covered containers.

In addition to these generally applicable measures, all contractors would be required to meet any other local or state regulations for large scale construction activities. As noted in Chapter II, predicting air quality impacts from construction is very difficult. Nevertheless, even though it is not possible to quantify the problem, conformance

with environmentally sound construction practices should prevent the violation of ambient air quality standards for either exhaust emissions or for suspended particulate matter.

Traffic disruptions would occur primarily in the areas immediately surrounding the stations and would include delays due to congestion, detours onto local streets and restricted vehicular access to some businesses. These would be minimized through judicious construction staging and temporary decking aimed at maintaining the existing vehicular capacities. Traffic circulation, street and intersection closures, and parking accommodations would be designed to limit intrusion into neighborhoods adjacent to the station areas. Scheduling of construction activities would be coordinated with the contractors, local police, fire and utility departments, affected retailers and other businesses, and other concerned agencies and organizations.

Stream siltation is a potential adverse impact at Alewife and Mill Brooks. However, erosion control techniques and the use of sediment basins would minimize this occurrence. Other potential negative effects, such as disruptions to recreational or historic resources, have received careful consideration. The project has been modified or protective measures introduced as needed; no additional unavoidable adverse impacts are presently anticipated.

Chapter XI

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

CHAPTER XI

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Red Line Extension would have both adverse and beneficial impacts of limited duration, primarily along the alignment and in the station areas. Among the short-term adverse impacts are:

- Traffic congestion and detours during construction.
- Temporary reduction of air quality due to exhaust emissions and dust generated by operation of construction equipment.
- Construction-related noise and vibrations.
- Displacement of businesses.
- Potential revenue losses to businesses adjacent to construction sites due to limited access.
- Brief interruptions to utility services.

Short-term beneficial impacts would include employment of 14,500 skilled and semi-skilled workers; increased revenues to local construction material and equipment suppliers; and the associated economic multiplier effects of stimulating a broad spectrum of the local economy.

On a long-term basis, the project would also generate both negative and positive impacts. The negative long-term impacts include the elimination of commuter and freight rail service and the commitment of land area to the transit system. Beneficial effects of the project would be experienced by users of the transit system as well as non-users. These include the aggregate transportation-related benefits discussed in detail earlier in this chapter, such as:

- Reduced travel time and cost.
- Improved accessibility to jobs, services and recreation.

- Improved mobility, particularly for the young, elderly and handicapped.
- Reduced traffic congestion.

Other positive benefits would also be realized, including:

- Assistance in controlling the direction and nature of growth.
- Improved air quality.
- More efficient use of energy.

In the long-term, the benefits accruing to the region would significantly outweigh the impacts generated during construction. The project would result in an improved, balanced transportation system and would be compatible with proposed land uses. Thus, the project would aid in the maintenance and enhancement of long-term productivity of the total environment.

Chapter XII

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

CHAPTER XII

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The major irreversible and irretrievable commitments of resources resulting from the project would be the loss of freight and rail service and the commitment of land area to the transit stations. Potential impacts related to parks, open space, historic, water and housing resources either do not commit resources, or can be avoided through the use of mitigating measures.

Location of the project alignment in existing railroad rights-of-way minimizes the extent and kinds of potential impacts for a project of this scale. However, the project would result in the elimination of freight and commuter service on the Lexington Branch and service on the Freight Cutoff of the MBTA South Acton Commuter Rail Line. Although appropriate steps would be taken to mitigate this impact, the removal of the railroad tracks during construction of the project would irreversibly commit the right-of-way to another transportation mode.

Since the Northwest Subregion is heavily urbanized, land available for development has a premium value. Implementation of the project would commit the land area to public transportation and for all practical purposes, this land would not be available for other uses; however, only a small amount of developable land would be taken, and the potential for joint development at the station areas would result in compatible multiple uses.

Construction of the project would also require commitments of other resources including concrete, steel, water and fuel to power construction equipment, and human labor resources. Expenditure of these resources would result in balanced transportation system in the Northwest Subregion and would produce numerous transportation-related and other benefits.

RESPONSE TO WRITTEN COMMENTS
ON DRAFT ENVIRONMENTAL IMPACT
STATEMENT, NOVEMBER 1976

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FEDERAL AGENCY COMMENTS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I

FILE

See

MA-23-9008

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

January 27, 1977

RECEIVED

JAN 31 1977

UCA-30

Mr. Peter Benjamin, Director
Office of Program Analysis
U.S. Department of Transportation
Urban Mass Transportation Administration
Washington, DC 20590

Dear Mr. Benjamin:

- (1) We have completed our review of the Draft Environmental Impact Statement for the proposed Red Line Extension, Harvard Square to Arlington Heights, Boston, Massachusetts.
- (2) By providing commuters with an attractive alternative to the automobile, this project is an important step toward alleviating the serious air pollution problem that now exists in metropolitan Boston. The proposed Red Line Extension project is consistent with the transportation control plan and other air pollution control strategies now being implemented by EPA and the Commonwealth of Massachusetts to meet the Clean Air Act's requirements. In addition, it appears that there will be no significant long term water quality or noise problems, if the project is implemented in accordance with the strong mitigating measures recommended in the EIS.
- (3) Although the impact statement adequately covers most of the project's potential impacts, we believe there are two major omissions. First, the EIS does not provide a thorough analysis and discussion of localized air pollution problems that will occur as a result of automobiles being attracted to the new parking garages. Second, in Section VI, there are repeated references to a Route 2 "highway improvement" project. Yet the EIS does not describe this project in detail, nor does it specifically address the air and water quality impacts of such "highway improvements". Of particular concern are potential affects on the sensitive wetlands and open space areas of Alewife Brook Reservation. While the EIS states that there are long range plans to improve this area for recreational use, it does not discuss the influence the "highway improvement" project may have on these plans. It may be that constructing a new roadway viaduct from Route 2 to the Alewife Station would obviate any future value of the Reservation as a parkland. It is clear that the design of the Alewife portion of the Red Line project will have substantial influence on the outcome of the "highway improvement" project. Thus, we feel

Mr. Peter Benjamin

Page Two

January 27, 1977

that the Red Line EIS cannot be considered complete in absence of a full disclosure of the "highway improvement" project and its potential impacts.

- (4) Additional comments on air and noise impacts are provided in the enclosed memoranda. If you have any questions concerning our comments, do not hesitate to contact me.
- (5) We have rated the EIS LO-2 in accordance with EPA's national rating system, an explanation of which is enclosed. Thank you for the opportunity to review the Draft EIS. We will look forward to receiving a copy of the final when it becomes available.

Sincerely,

Wallace E. Stickney

Wallace E. Stickney, P.E.
Director, Environmental Policy
Coordination Office

Enclosures

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 13, 1977

SUBJECT: EIS - Northwest Extension of Red Line

D. Fierra
FROM: David A Fierra, Chief
Air Branch

TO: Wallace Stickney
Environmental and Economic Impact Office

- (1) My staff has reviewed the air portions of the Environmental Impact Statement for the Red Line Extension from Harvard Square to Arlington Heights and find that the project will have no adverse effects on the region's air quality. In fact, the project will have a positive impact in that it improves accessibility of areas served by mass transit with an overall reduction in automotive travel and a reduction in the need for parking spaces in the core area. However, a few comments could be made on potential problems in the locality of the stations.
- (2) Careful attention should be given to the design of the parking facilities to assure that related activities do not cause a carbon monoxide problem. (The EIS makes no mention of an air analysis on the three parking garages.) Also, the draft EIS claims a diversion from auto to transit of 8900 vehicle trips per day. At the stations, however, only 2700 additional parking spaces are provided. Assuming that approximately 15 percent will walk or take some other means of transit to the station, that still leaves some 4900 vehicles that have no place to park. The only options for the excess load would be to park on the city streets surrounding the new stations or just drive to their final destinations. Both of these options would have a negative effect from CO emissions on the local air quality.
- (3) While much has been prepared on the carbon monoxide issue, there is no discussion of the fact that the region presently records violations of the oxidant standard. There was no attempt to determine what the overall impact of this project would be on the oxidant violations, be it positive or negative.
- (4) Also, careful attention should be given to the potential secondary land use impact of such a project in the fringe areas of the new stations.
- (5) An analyses should be made of the induced growth due to the new stations and what the potential of any additional pollution impact would be.
- (6) The problems addressed above can all be mitigated by careful design of the final facility. If adequate consideration is given to air quality in the final design stages, no adverse air quality problems will arise.

MEMORANDUM

FROM: G.A. Russell
Noise Consultant

DATE: January 10, 1977

TO: Wally Stickney
Environmental Impact Office

SUBJECT: Review of Noise and Vibration Impact Assessment, Red Line Extension
Draft EIS

The subject EIS has been reviewed with particular attention given to those sections dealing with noise and vibration impacts. Because of the length of the EIS document, review comments are given in the order of their occurrence in the EIS document.

Chapter II, GENERAL PROJECT DESCRIPTION, pp II-106 to II-113

- 1.) This section gives a good over-view of the existing noise climate in the study area and the possible impacts from the proposed extension. This reviewer agrees with the general assessment that "noise from transit operations will, in general, not add significantly to the existing noise in much of the region, with possible exceptions being near ventilation shafts and near at-grade and in-cut operations."
- 2.) The discussion of noise and vibration control measures indicates a thorough knowledge of existing techniques used in transit systems. It is not clear however, as to what particular methodologies (e.g. floating slab, isolated double ties, welded rail, etc.) are being recommended for the Red Line extension. It may be that such recommendations will not be given until additional, more detailed, studies are carried out. If this is indeed the case, some statement to this effect should be given in the EIS.

Chapter III, HARVARD SQUARE AREA, pp III-73 to III-82

- 1.) Noise measurements taken at 25 different locations in the Harvard Square area are reported. At least 13 of these 25 measurements (see Figure III-25) were taken from a previous EIS study for the JFK Library. While there is nothing wrong with using data from previous studies to define the existing noise climate, the EIS should clearly indicate just what data has been taken from other studies. Locations 1 through 12 on Figure III-25 have not been identified specifically in this regard.
- 2.) The location of ventilation shafts should be pointed out and measurements of the existing noise climate in the vicinity of these shafts should be reported. As was pointed out in Chapter II, the noise from these ventilation

shafts can add significantly to the existing community noise level.

- 3.) The discussion of the vibration levels in nearby buildings does not address the problem of excessive vibrations during the construction phase of the project. This possible impact should be pointed out and some estimate of its extent should be presented.
- 4.) The "peak noise hour" given for the first entry in Table III-23, page III-75 appears to be incorrect.

Chapter IV, HARVARD SQUARE TO PORTER SQUARE, pp IV-45 to IV-47

- 1.) Some editorial errors detracted from the presentation given in this section:
 - (a) Figure V-8 has no identifying caption.
 - (b) The exact location of the Lincoln School noise measurement site is not clearly shown on Figure II-1B or C.
- 2.) Several conclusive statements in this section, e.g., "none of the surface criteria levels are expected to be exceeded by subway operations along this segment" and "existing noise levels should not be affected by train operations or by station activities in this section," are given with no supporting evidence. Certainly, some general statements such as those quoted above must be made in a study of this magnitude but the presentation would be more persuasive if some numerical values of "before" and "after" noise levels were included.

Chapter V, PORTER SQUARE TO DAVIS SQUARE, pp V-35 to V-37

- 1.) Apart from comments already given above there are no comments on this Chapter.

Chapter VI, DAVIS SQUARE TO ALEWIFE, pp VI-91 to VI-93

- 1.) There are no new comments to be made pertinent to this section.

Chapter VII, ALEWIFE TO ARLINGTON CENTER, pp VII-67 to VII-69

- 1) There are no new comments pertinent to this Chapter.

Chapter VIII, ARLINGTON CENTER TO ARLINGTON HEIGHTS, pp VIII-65 to VIII-67

- 1.) It is not clear from the somewhat limited discussion given here just what predictive model was used in estimating the 80 dBA at 30 feet driveby level. Extrapolating this 80 dBA to 70 dBA at approximately 115 feet away implies that something other than simple spherical or cylindrical spreading was used in the predictive model, but no specific details are given. More information on the noise prediction methodology would be useful here.

APPENDIX D, NOISE AND VIBRATION CRITERIA

- 1.) As the title suggests, this appendix purports to give criteria which might be used to evaluate the noise and vibration impact of the proposed project. This appendix, however, gives no information on acceptability criteria for

vibration levels. Some indication of what constitutes an acceptable level of vibration, particularly for single events rather than continuous exposure, would be appropriate here.

- 2.) Information given here on noise criteria, while useful for the general reader, is not specific enough for the particular problems associated with the proposed project. For example, what noise criteria (FHWA, HUD, EPA) is best suited for the intermittent transit system type of noise exposure-how late at night will trains operate and does this factor influence the noise impact evaluation-is there a psychological factor involved which might make transit system noise less annoying to nearby residential receptors? Answers to these, and other such questions would not be out of place in this appendix.

OVERVIEW

Taken in its total context, the noise and vibration assessment presented in this EIS appears to be lacking in several respects. There does not appear to be any definitive statement of what the impact will be, for example there is no listing which compares existing levels against those projected for the completed project. There is also not enough discussion of the extent of the noise and vibration impact, that is, how many receptors will receive what level of increased noise and vibration?

This reviewer is left with the distinct impression that a considerable amount of noise and vibration analysis was carried out but not included in the EIS report. The extensive noise measurements cited, the vibration measurements, the thorough discussion of possible vibration reduction techniques, and some of the graphs shown all seem to indicate that a reasonable effort was expended in studying possible noise and vibration impacts. The presentation given in the DRAFT EIS report however, does not seem to give an adequate treatment of this problem. The complaint here may be editorial rather than technical, but the fact remains that the present EIS does not give a good treatment of the noise and vibration impacts.

EXPLANATION OF EPA RATING

Environmental Impact of the Action

LO -- Lack of Objections

EPA has no objections to the proposed action as described in the draft environmental impact statement; or suggests only minor changes in the proposed action.

ER -- Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating federal agency to reassess these aspects.

EU -- Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1 -- Adequate

The draft environmental impact statement sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 -- Insufficient Information

EPA believes that the draft environmental impact statement does not contain sufficient information to assess fully, the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft environmental impact statement.

Category 3 -- Inadequate

EPA believes that the draft environmental impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft environmental impact statement is assigned a Category 3, no rating will be made of the project or action; since a basis does not generally exist on which to make such a determination.

Paragraph
Number

Response

3

Microscale analysis included CO air quality evaluation on a station specific scale for the Harvard Square, Porter Square, Davis Square, Alewife, Arlington Center and Arlington Heights areas. These analyses considered the motor vehicle activity induced by parking garages and stations. Detailed discussion is given in Appendix H, and the results are presented briefly in the Air Quality sections of each of the six station chapters (III thru VIII).

Detailed discussion concerning the proposed highway improvements at Alewife has been added to Chapter VI. See pages VI-7 to VI-10. Appendix J to the Final EIS contains a draft of the Updated Environment Overview Summary currently being prepared by the MDPW for these proposed improvements.

Additional traffic and transportation concerns have been addressed in a recent traffic study conducted by the City of Cambridge for Alewife. A draft of this report is included as Appendix K to the Final EIS. A summary of this report is contained in Chapter VI.

4,5

Appendix H contains detailed information on the air quality analysis performed. This information should help answer most questions on air quality.

Paragraph
Number

Response

2

Microscale analysis included CO air quality evaluation for all station areas. These analyses considered the motor vehicle activity induced by parking garages and stations. Detailed discussion is given in Appendix H, and the results are presented briefly in the Air Quality sections of each of the six station chapters (III thru VIII). See pages III-62, IV-46, V-38, VI-112, VII-68, and VIII-68 .

The Final Environmental Impact Statement (FEIS) presents predicted CO concentrations in the immediate vicinity of the stations. Tables on the total CO concentration account for all related activities including parking. Also, the excess parking demand of approximately 4,000 vehicles was accounted for in the air quality model.

3

Although HC and NO_x are not modeled, they are assessed on an areawide basis by comparing the emissions resulting from the build and no build cases in Section II-B of Appendix H. It is commonly assumed that O_x levels are proportional to hydrocarbon emissions. Consequently, a rough estimate of the effects of the various alternatives on oxidant levels was made by comparing the respective emission rates.

4,5

Additional text has been added to the Final EIS on potential secondary land use impacts. This new text is a summary of the David A. Crane Report prepared for the City of Cambridge under the Joint Development Program. It contains an analysis of the potential impacts of new land uses which could occur around the proposed Alewife Station. The Gladstone Report, prepared for the Town of Arlington, assesses the potential impact on land use from an extension of the Red Line through that town. See pages VI-71 to VI-80 of Volume II. Also refer to responses to the letter from the Massachusetts Executive Office of Environmental Affairs found on page 67 of this volume.

6

Consideration will be given to air quality in final design stages of the project.

<u>Paragraph Number</u>	<u>Response</u>
Chapter II 1	Statement is added on page II-124, paragraph entitled "Noise Control Implementation".
2	Recommendations for the exact techniques to be used for noise and vibration control will not be given until additional, more detailed studies are carried out during the final design stages of the Project.
Chapter III 1	Source has been noted on Figure III-17 (formerly Figure III-25).
2	The exact locations of vent shafts, blast shafts, and other openings (such as entrances) which could be a source of airborne noise will be verified in later design development. The design consultants will be responsible for obtaining pertinent ambient noise information and to recommend appropriate control measures consistent with APTA criteria.
3	Discussion of construction vibration has been expanded in Appendix D. See page D-9.
4	Table III-9 has been corrected.
Chapter IV 1	Figure V-8 is now Figure V-6, Davis Square, diurnal noise pattern.
2	The Lincoln School, at 35 Waldon Street, is not shown because it is outside the Project Corridor illustrated in Figure IV-16.
Chapter VIII 1	See examples 1 and 2 attached to Appendix D for additional material on noise criteria and methodology.
Appendix D 1,2	Determinations of applicable criteria has been one facet of coordinated design effort that has occurred subsequent to the development of EIS material. Criteria statements have been included in Appendix D. These are representative examples of criteria which will guide preliminary design considerations.

UNITED STATES GOVERNMENT

Memorandum

RECEIVED

JAN 31 1977

UCA-30

MA-23-9008
FILE

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE SECRETARY

DATE: JAN 28 1977

SUBJECT: Draft Environmental Impact Statement for the Red
Line North Extension, Boston, Massachusetts
MA-23-9008

In reply
refer to: TES-72

FROM : Acting Assistant Secretary for Environment,
Safety, and Consumer Affairs

TO : Director, Office of Program Analysis, UMTA/UTA-30

- (1) This office has reviewed the draft environmental impact statement (EIS) for the proposed 6.4-mile extension of the Red Line rapid transit system, from Harvard Square to Arlington Heights in the Boston area.
- (2) While the relevant sections in the draft EIS discuss a wide range of possible techniques for minimizing harm, the degree of commitment locally to actual implementation of such techniques is unclear in many instances. (See e.g. pages IV-18, IV-31, IV-42, V-15, V-26, VI-23 and 24, and VII-53 and 54.) It would be helpful to have additional information on these matters included in the final EIS.
- (3) We would also call your attention to the attached letter from Dr. Herbert M. Meyer, a participant on the Alewife Task Force. The issues and concerns raised in this correspondence, particularly those involving access to the Alewife station parking garage, should be given appropriate consideration in the final EIS.
- (4) Thank you for the opportunity to review the draft EIS for this project. We look forward to receiving the final statement, including the responses submitted by other government agencies and the general public.

M. Convisser
Martin Convisser

Attachment



276 Massachusetts Avenue
Arlington, MA 02174
December 23, 1976

Mystic River Watershed Association, Inc.

Mrs. Judith T. Connor
Assistant Secretary for Environment, Safety and Consumer Affairs
400 Seventh Street SW
Washington, D.C. 20590

Re: Red Line North Extension
MA - 23 - 9008

Dear Mrs. Connor:

The Urban Mass Transportation Administration (UMTA) is presently circulating the Draft Environmental Impact Statement of the Red Line North Extension between Harvard Square, Cambridge and Arlington, Massachusetts, for comments from federal, state and local agencies.

The Mystic River Watershed Association has been participating in that study since early 1975, as a member of the Alewife Station Task Force. The review period will end on January 10, 1977, or on January 25, if an extension is requested. Our Association submitted a number of comments on the preliminary draft of the impact statement to UMTA on November 9, 1976; but UMTA failed to include them in the current Draft EIS. We would like to bring our comments to your attention at this time. A copy of the comments is enclosed.

Sincerely,

Dr. Herbert M. Meyer
M.R.W.A. representative to the
Alewife Task Force



276 Massachusetts Avenue
Arlington, MA 02174
November 9, 1976

Mystic River Watershed Association, Inc.

Mr. Robert E. Patricelli, Administrator
Urban Mass Transportation Administration
Department of Transportation
Nassif Building
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Patricelli:

The Mystic River Watershed Association is composed of citizens of Massachusetts who reside in the area that will be affected by the proposed subway extension from Harvard Square in Cambridge to Arlington Heights. Our Association has participated in the planning of this project since early 1975. Citizen participation has been exerted through task forces which were formed for each proposed station along the extended route. Our Association belongs to the Alewife Brook Station Task Force.

We want you to be aware that we are unhappy with the shifting procedures to reduce the process of active participation to one of passive review (please see Part I below), and with the lack of alternative proposals to a proposal which disregards the protection of public open space (please see Part II below).

Part I PROCEDURE

The Massachusetts Bay Transportation Authority (MBTA) issued an Environmental Analysis Report prepared by its consultant DeLeuw, Cather & Co. in February of this year. In March, public hearings were held in Arlington, Somerville and Cambridge at which representatives of our Association testified. After the hearings, UMTA recommended that the Report be rewritten as a full environmental impact statement (EIS) in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA).

We asked the MBTA repeatedly for its responses to the comments made by our Association at the hearings so that we may have the opportunity to provide further meaningful comments for consideration in the preparation of the Advance Copy to the Draft EIS (see Appendix 1). The MBTA said that they could not grant our request until instructions had been given by UMTA (see Appendix 2).

The MBTA member of the Alewife Brook Task Force reported a month later that MBTA would give review copies of the Draft EIS to the Task Force after its next meeting with you (see Appendix 3). Subsequently, our Task Force Chairmen informed us that the "proposed draft package" would be prepared as a review edition and that we would have time to make comments for your review before the Draft EIS was finalized and circulated to the other federal agencies (see Appendix 4). The MBTA representative told us at our next meeting that you had requested important changes and that he felt that we should wait until we could see the whole "package" (see Appendix 5). This amounted to MBTA's refusal to allow public participation in the preparation of the Advance Copy of the Draft EIS.

Our chairman called the next meeting in expectation that Volume I of the "package" would be available for our review and comment (see Appendix 6). However, the Advance Copy of the Draft EIS was not ready and the MBTA member said that the MBTA was in a hurry; he requested a quick review by the Task Force, municipalities and the Red Line Working Committee. He also stated we would see MBTA's responses to our statements at the March hearings (see Appendix 7). When the Advance Copy of the Draft EIS, including capital grant application, written and oral statements at the March hearings and MBTA's responses to them, became available, the Task Force reconvened its editing subcommittee of which our Watershed Association is a member. The Subcommittee submitted its reviewing comments in an exceedingly short time at the next Task Force meeting. The Chairman reported that MBTA would convey these recommendations to you (see Appendix 8).

But when we met on October 7, the MBTA representative said that there was no hurry anymore and that we could complete and refine our review later because the Task Force recommendations would not go to you with the Advance Copy of the Draft EIS. Instead your upcoming Draft EIS would be a virtually unchanged reprint of the September Advance Copy and this reprint would be circulated among the federal agencies (see Appendix 9).

This series of delays and procedural changes defeats the very purpose of public participation in transportation projects because you will not see our recommendations before the printing of the Draft EIS which the federal agencies will review and they will not see them at all. We feel frustrated and hurt by the repeated false expectations given us by MBTA representatives. Worse, the delay of transmittal makes your own review and that of the other agencies unnecessarily difficult and time consuming since they are deprived of the benefit of our input. We outline some of our intended input below. In turn, you will need additional time to take care of our comments in the probable event that they should contain recommendations which you deem substantial. Thus, one cannot rule out the possibility that you will have to revise the Draft EIS substantially. This consequence of the degradation of participation into a mere reviewing process is the heart of our complaint: **REVIEWING IS NOT PARTICIPATION!**

The MBTA has accomplished that reduction of public participation into mere reviewing by small continuous shifts in procedure as we have shown

ve. Hence, one cannot rule out the future possibility of strong local public opposition with all the troublesome consequences for the transportation project which the 3-C Process was designed to prevent. We as well as the other citizen members of the Alewife Brook Station Task Force have freely given of our time and maintained our commitment at the cost of sustained personal sacrifice for close to two years. We submit that an eventual confrontation, after such an amount of good will and effort has been spent, would indeed be tragic and a defeat for good government. Therefore, we respectfully urge that you direct MBTA to forward to you our recommendations and that MBTA and the Task Force discuss these recommendations with you before the Draft EIS goes to press. This request is in your own interest since the participatory process can work only when the channels of communication are kept wide open between citizen participants and the various levels of government.

Part II SUBSTANCE

Our comments are substantive and go to the heart of the project. For example, the proposed alignment west of the Alewife Brook Station lies within some of the most sensitive wildlife refuges and wetlands in the Cambridge-Arlington-Belmont-Somerville area. Therefore, this half mile west of the station location should be scrutinized. Since a large part of that land is owned by the Metropolitan District Commission (MDC), the provisions of Section 4(f) of the 1966 DOT Act, as amended, must be followed.

IIa: Tunnel, Storage and Turnback Tracks

Chapter VI of the Advance Copy which deals with the Alewife Station states: "No Alewife Brook Reservation land would be required and negative impacts to the Reservation would be minimized" (page VI-69), and "a total of one to two acres of Reservation land may be used temporarily during project construction" (VI-70). However, the special 4(f) section of chapter VI does not even mention this half mile of alignment west of the station on the Reservation land.

The next chapter deals with the segment from Alewife Brook to, and including, Arlington Center station. Chapter VII mentions the tunnel section, turnback-and-storage facilities of Alewife Station (VII-1); but the 4(f) inventory and special 4(f) section of chapter VII do not. Thus the Advance Copy fails to describe the public open space which the alignment traverses and its impact on that area (VII-54) as mandated by DOT.

The comments of the editing subcommittee on the MBTA grant application and Draft EIS for the Red Line Northwest Extension which were submitted at the October 7 Task Force meeting describe these impacts (see Appendix 10). The MBTA representative who attended the meeting did not question the validity of those comments. Thus, if the Draft EIS would

even the text of the Advance Copy unchanged and our comments failed reach you in time before the Draft EIS goes to press, the objective participatory process would be lost.

II B: Access to Station Parking Garage

The capital grant application calls for a 2000 car garage at Alewife Brook. The Advance Copy of the Draft EIS describes the garage; it mentions advantages to be derived from the roadway and ramp constructions and from their coordination with the subway construction (page VI-24). However, the Advance Copy ignores the simultaneous, parallel but independent ramp and roadway study of the Massachusetts Department of Public Works (MDPW) which FHWA is aiding and in which the Alewife Station Task Force is participating. Instead, the MBTA subway study proceeds under the fiction of a "no-build" MDPW road alternative.

The MBTA knows full well that the MDPW study has progressed to the point where a single alternative, the "Minimum Build", has been chosen by the Massachusetts Executive Office of Transportation and Construction (EOTC) but is stalled because of EOTC's intended request to FHWA to declare the roadway proposal a "Non-major Action". Non-major actions do not require the filing of an EIS. Since most of the open space at Alewife Brook is public, one would assume that Section 4(f) applies. However, MDC which has jurisdiction over the Reservation may change its mind and make a determination of "Non-Significance" for the impacted wetlands while maintaining a determination of "Significance" for the remainder of the Reservation, in order to support EOTC's position of non-major action. The MDC is reasoning that it can continue the claim of significance for the remaining 95% of its Reservation while snipping off the impacted area. We submit that such piecemeal determination is legally unsound.

One of the features of the Minimum Build alternative is two viaducts, one with two lanes and shoulder in each direction from Route Two and the other for emergency access from Route Two's westbound lane to the subway station parking garage. The viaduct is to keep cars away from the interchange between the Concord Turnpike and Alewife Parkway (see Appendix 11). The most recent change order calls for the viaducts not to run over the same B & M right-of-way which the subway uses. Thus, the viaducts will have a combined width of approximately 120 feet resulting in massive impact on the already fragile wetlands through which the 32 foot deep subway tunnel cuts. As mentioned earlier, the Advance Copy of the Draft EIS ignores these facts.

Part III CONCLUSIONS

1. We submit that the two project studies of MBTA and MDPW should be consolidated even at this late hour. Since the beginning the Alewife Task Force has recommended that unification repeatedly. Its members have so testified at the March, 1976, public hearing. The MBTA responded

"throughout the course of planning for the Red Line extension [it] has been in close contact with the MDPW....To assist in coordinating all aspects of this project, and the related highway and land use issues, the Alewife Task Force was established....The EOTC and CIPS have also participated in the process to ensure that the project is advanced in a comprehensive manner. The MBTA is committed to the continuation of this coordination during the advanced engineering phases" (page 11-27).

2. We submit that this response of MBTA can very likely mislead you and the federal agencies into concluding that the Alewife Brook Station and related facilities will cause no significant damage to the public open space, in the event that you - and they - are kept unaware of the details of the roadway study.

3. We submit that MBTA's claim to have been in close contact throughout with MDPW does not tell the full story. The agencies are hiding the fact that both projects will severely and permanently impact significant public open space at Alewife Brook. MBTA accomplishes this by omitting any reference to that space in the Draft EIS chapters VI and VII's special 4(f) sections; and MDPW accomplishes this by aiming at a non-major action ruling by FHWA.

4. We submit that the MDPW project is subway station related; has to be included in MBTA's Draft EIS for the Red Line Extension; and thus, is subject to the Section 4(f) provision of the 1966 DOT Act, as amended.

5. We submit that the true story is due to come out at some future time possibly through continuing protests by neighboring groups.

6. We submit that the project will be a costly result in delay and avoidable costs, especially since the two projects intend to begin design and engineering phases before the review process has run its course.

7. We submit that the MBTA claim, quoted earlier, that the Alewife Station Task Force was established to assist in coordinating all aspects of this project omits to include mention that both MBTA and MDPW have ignored and suppressed assistance and advice from the Task Force.

8. We submit that the purpose of citizen participation and of the 3-C Process has been thwarted and that, therefore, a future confrontation remains a possibility which these processes have been designed to prevent.

9. Finally, we submit that DOT Order 6550.1 of May 21, 1975, which singles out wetlands for special consideration, is being ignored.

To sum up, we respectfully request that the Advance Copy of the Draft EIS be corrected and completed with consideration of the Task Force comments; that Section 8 of the Draft EIS adequately discusses

ternatives to the proposed action which would cause less severe impact on the open space; and finally that citizen participation and the 3-C Process be restored to a meaningful level.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "H. Meyer", enclosed within a circular stamp.

Dr. Herbert Meyer
MRWA Representative on the
Alewife Task Force

DEPARTMENT OF TRANSPORTATION, SECRETARY FOR ENVIRONMENT,
SAFETY, AND CONSUMER AFFAIRS, January 28, 1977

Paragraph
Number

Response

[2]

Cambridge - In a letter dated January 10, 1977, to Mr. Peter Benjamin of UMTA, Mr. James L. Sullivan, Cambridge City Manager, stated that "..... I feel the document (DEIS) suitably covers the environmental impacts of concern to the City of Cambridge. Although in some instances the city disagrees with certain specific proposals outlined in the text, most of these issues have been addressed and rectified during the pre-grant engineering and design phase now underway."

"We in the City of Cambridge view the process as a continuing effort with, hopefully, a great deal of flexibility so that the MBTA has the ability to react positively to issues as they arise during project design. The City and the MBTA have maintained over the last few years a very high level of cooperation and good will. I am confident that most disagreements can be addressed to the mutual satisfaction of both parties."

Somerville - The Davis Square Task Force is continuing to monitor the design work of the consultants during the advanced engineering phase in order to guide the City of Somerville in its recommendations to the MBTA and to keep the community informed on all issues which will directly affect the Davis Square area during both construction and operation of the subway.

Arlington - On numerous occasions the MBTA has stated that they are committed to continue close coordination during pre-grant engineering with the Town of Arlington and the various town agencies and interested groups in order that the planning and design of the Red Line Extension will be responsive to the desires of the people of Arlington. In letters to the Town of Arlington dated _____ and to Reverend Monsignor John J. Linnehan dated April 29, 1976, this policy was affirmed. Examples of this joint effort are the revisions to earlier proposals by locating the alignment entirely in cut-and-cover tunnel to Arlington Heights and the elimination of a parking garage at Arlington Center.

DEPARTMENT OF TRANSPORTATION, SECRETARY FOR ENVIRONMENT,
SAFETY, AND CONSUMER AFFAIRS, (Continued)

Paragraph
Number

Response

3

The concerns of Dr. Herbert M. Meyer have been considered during the process of finalizing the Environmental Impact Statement. See responses to the letters from the Alewife Task Force and the Mystic River Watershed Association on pages 45 and 250 of this volume.

FEDERAL ENERGY ADMINISTRATION

REGION I, BOSTON, MA 02114

JAN 19 1977

UCA-30

OFFICE OF THE REGIONAL ADMINISTRATOR

Peter Benjamin, Director
Office of Program Analysis
Department of Transportation
UMTA
Washington, D.C. 20590

Dear Mr. Benjamin:

- [1] The Federal Energy Administration has reviewed the Draft EIS for the Red Line North Extension, Boston, Massachusetts MA-23-9008. We have the following general comments:
- [2] This DES is entitled "Red Line Extension - Harvard Square to Arlington Heights". Therefore, it is felt that the use of and reference to data for possible future extension to Route 128 is not relevant to this statement. Either this extension is supportable on the data presented within the proposed limits or the project limits should be modified. It appears from reading the DES that the wrong project limits have been selected. It seems that two separate projects are being promoted, the first being the Harvard Square to Alewife section and the second the Alewife to Arlington/Route 128 section. The latter project depends upon the final assessment of the B & M Lexington Branch right of way and the best suited mode of transportation within the section. The other alternative method is that this DES should be for the entire Harvard Square to Route 128 proposal. It appears that this would answer the technical questions about the Alewife Station as well as not having to stop half way between Alewife and Route 128 when it may be less costly to do the entire project at one time.
- [3] The following specific comments are submitted:
 - 1. Summary Sheet, paragraph 3A2. It is questionable, when looking at the entire region air picture, if there will be cleaner air due to change in transportation mode. We agree that the air will be cleaner in the local area along the Red Line corridor.

2. Table S-1 (Regional Political) - This section should make some reference to either the state or regional growth policy statement which contains significant material that was supplied by the local communities.
3. Page S-5 (Energy) - There is no reason to evaluate energy savings for an extension to Route 128. The estimate should be calculated for Arlington Heights only.
4. Page II-1, third paragraph - Reference is made of the project route running into Lexington. This is not within the scope of this proposal.
5. Page II-22, table II-5
 - a. Existing travel time from Arlington Center/Arlington Heights - is this time figured for the Lexington Branch of B & M or the MBTA transit system?
 - b. The topics Lexington Center and Route 128 are not pertinent to this report.
6. Page II-24, table II-6 - same comment as 5b
 Page II-26, table II-7 - same comment as 5b
 Page II-27, table II-8 - same comment as 5b
 Page II-28, table II-9 - same comment as 5b
 Page II-30, table II-10 - same comment as 5b
 Page II-31, table II-11 - same comment as 5b
 Page II-40, table II-12 - same comment as 5b
 Page II-41, table II-13 - same comment as 5b
 Page II-43, table II-15 - same comment as 5b
 Page II-45, table II-17 - same comment as 5b
 Page II-47, table II-18 - same comment as 5b
7. Page II-29, second paragraph under Access - The number totals should be changed to reflect the corrected totals for this proposed project to Arlington Heights. Total riders change 22,100 to 19,100 which is 45.6% projected. Change 10,650 to 9,210 and 11,450 to 9,890.
8. Page II-32
 - a. Second paragraph under Mobility - Add the word "possible" before the word "employment" in the third line.
 - b. Regional Benefits - are these conclusions similar to those presented in the Northwest subregional growth policy statement?
9. Page II-38, second paragraph - Change 10,650 to 9,210 and change "Route 128" to "Arlington Heights".

10. Page II-42, second line under Parking - Delete "4900 vehicles per day, if the Red Line is extended to Route 128".
11. Page II-61 Racial Composition - This section should be deleted. This is unnecessary material for the evaluation.
12. Page II-104 Air Quality

The air quality evaluation for the vehicular traffic around the proposed extension appears to be accurate, however, it is not complete. It is assumed that the extended Red Line will continue to be electrified. The generation of electricity not only creates a large air pollution problem, but also a significant water pollution problem. Therefore, if we are going to evaluate the reduction of pollution caused by the decrease of automobiles within the region, we must also look at the pollution created by the additional generation of electricity as well as the cost of pollution control devices that must be added to the old MBTA power-facilities.

13. Page II-105 Energy
 - a. Line 6 - delete the phrase "1980 energy savings associated with an extension to Route 128 could range from 134,400,000 BTU/day to 613,200,000 BTU/day."
 - b. A subsection or table should be added to this paragraph that compares the energy efficiency of the different modes of transportation, i.e., automobile, diesel commuter train, electrified rapid transit.
 - c. The chart at the top of the page should be changed to reflect the BTU/passenger mile comparison for the three major modes of transportation, i.e., auto, commuter rail, rapid transit.
 - d. Another subsection should be added under this title which would evaluate the proposed electrical generation needed for this extension. Will the system be adding new generation facilities? If so, where? What will be the pro-rated energy cost for this extension? Will additional energy be purchased from outside the system? From where and at what cost?
14. Page II-149 Disposal of Excavated Materials - This definitely has an environmental effect upon the project. Therefore, this section should be more complete and not state that information will be evaluated when it becomes available. This section should also include possible sites that will be used and that are approved by Mass. DEQE.

15. Page IV-12 Alternative Technology C - Commuter Rail

There appears to be another alternative that was not fully presented. The alternative is the combination of commuter rail with Rapid Transit. The closest alternative evaluated seems to be the dual system, however that alternative covers two adjacent systems. The combination alternative would not use the same track routes but would upgrade the existing commuter rail system between Alewife and Arlington Heights for approximately the same costs doing the same upgrading proposed for the conversion to rapid transit. The rapid transit system would be the same as is proposed between Harvard Square and Alewife. However, a transfer station would be set up at Alewife that would connect to the commuter rail service. Because the Boston & Maine Lexington Branch is operational, it would be cheaper to upgrade this system and service. Other savings incurred would be not having to change the freight line to the Bedford Branch and the relocation of the few small industries which are located along this line. The system would still service the same 10,300 passengers estimated on page II-40/16,300 from Route 128 or save approximately 8,900 automobile trips to Boston (Page II-22). The possible monetary savings of not converting to a rapid transit system would be \$5,000,000 as a minimum of the total \$108,510,470 proposed for the Alewife-Arlington Heights Section (table II-4). This savings could be increased depending on bridge and underpass construction as well as the differential cost for the eventual extension to Route 128. The spending of \$100 million dollars for upgrading the commuter rail system would more than satisfy the problems raised on page II-49 Existing Rail Service and Page VIII-19 Safety. The same conclusion presented on page IV-30, last full paragraph, can be used for this alternative. Therefore, re-evaluating the topics outlined on pages IX-36 - IX-47 would change the picture for this alternative.

Sincerely,



Robert W. Mitchell
Regional Administrator

cc: R. Stern

<u>Paragraph Number</u>	<u>Response</u>
2	The Project described and assessed in this Final EIS is for an extension of the Red Line Subway from Harvard Square to Arlington Heights. All data presented within the Final EIS relate to this project. The mode selected for the extension between Arlington Heights and Route 128 depends on the outcome of Minuteman Area Transit Study. Heavy rail transit was already seen selected for the Alewife to Arlington Heights Section. See Chapter IX for a discussion of alternative analysis.
3.1	All beneficial effects described in Paragraph 3A2 of the Environmental Impact Statement have an implied reference to the Red Line Corridor as opposed to the entire Boston metropolitan region.
3.2	Significant material on state and regional growth policies is contained in Chapter I and Appendix F. See pages I-3 thru I-7.
3.3	A new section on energy consumption and conservation has been added to Chapter II. This new information contains estimates of the benefits and savings for the Red Line Extension to Arlington Heights only. See page II-113 thru II-117.
3.4	Reference to Lexington deleted.
3.5a, b	Travel time is figured for MBTA Transit system. Lexington Center and Route 128 are included in Table 11-5 because the Red Line Extension is proposed to extend ultimately to Route 128. This Environmental Impact Statement is for a project to Arlington Heights. The Minuteman Area Transit Study (MATS) examines the potential for an extension beyond Arlington Heights to Route 128.
3.6	See response to comment 3.5a, b.
3.7	Changes made to text. See page II-33.
3.8a	Changes made to text. See page II-36.
3.8b	Yes.

FEDERAL ENERGY ADMINISTRATION, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
3.9	Changes made to text. See page II-42.
3.10	Statement is made for comparison purposes. See response to paragraph 3.5a, b.
3.11	Material on social and economic issues and impacts is required by DOT Act of 1966.

FEDERAL ENERGY ADMINISTRATION (Continued)

Paragraph
Number

Response

3.12

After 1981, all MBTA power for operating of its systems will come from private utilities. This would include the Red Line Extension. Since all private utility generating plants in the Boston Area have already installed pollution control devices, no new costs will occur from such installation.

Although the generation of electricity may have secondary impacts, use of electricity to run a transportation system allows for the greatest flexibility for initial fuel choice. This may become very critical in the future, as certain fuels become scarce and the ability to switch from one fuel to another to generate electricity is an advantage.

The additional amount of fuel (1,250,000 gals. of No. 6/1% sulphar content fuel oil) required to generate the electricity to operate the Red Line Extension will produce an estimated:

. 500 tons/yr	Particulate Matter
. 981.2 tons/yr	SO ₂
. 18.8 tons/yr	CO
. 12.5 tons/yr	Hydro Carbons
. 656.3 tons/yr	NO _x

3.13a,b,c,d

All information requested is contained in the new section on energy. See page II-113 to II-117 of the Final Environmental Impact Statement.

3.14

Text on disposal of excavated material has has been expanded. See page II-188.

FEDERAL ENERGY ADMINISTRATION (Continued)

Paragraph
Number

Response

3.15

The proposed alternative suggests an upgraded rail system through Arlington which, like rapid transit, would be constructed in a grade separated alignment (to achieve a comparable level of service). As indicated on page VII-15 and IX-38 a depressed rail line would result in poor, if not impossible, operational gradients to reach the at-grade sidings of rail freight users. Hence a separate at-grade track would be needed to retain freight service. On page IX-38, third paragraph it is stated "....construction of a completely grade separated alignment for RDC service would cost approximately the same as the Red Line Extension, but would not provide a comparable level of service." The potentially lower level of service by commuter rail shuttle is discussed on pages IX-38, IX-39.

MA-23-9008

FILE

See



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

D

ER-76/1103

JAN 7 1977

JAN 11 1977

UCA-90

Dear Mr. Benjamin:

- [1] This is in response to a request for the Department of the Interior's comments on the draft environmental/Section 4(f) statement for the Red Line Extension - Harvard Square to Arlington Heights, Boston, Suffolk County, Massachusetts.

Section 4(f) Statement Comments:

- [2] Based on the information contained in the present statement, we concur with the response to both provisions of Section 4(f) of the Department of Transportation Act of 1966, as amended. It is evident that the existing social, cultural, and physical environment and high degree of urbanization in the project area preclude total avoidance of Section 4(f) lands. The tunnel construction, and other mitigation measures, represent all possible planning to minimize harm.

Environmental Statement Comments:

Cultural Resources:

- [3] We are pleased to note the consideration given to cultural resource protection. The display and discussion of consultations with and input by the State Historic Preservation Officer and local officials provide the Urban Mass Transportation Administration (UMTA) with essential data upon which to fulfill its responsibilities in the selection of a project alternative. There are, however, two areas of particular weakness in this draft environmental statement:

1. Mr. Sullivan (Cambridge Historical Commission) appropriately commented that the draft environmental statement should display UMTA's manner of intent to comply with Section 106. Exhibit B of Appendix G suggests two alternative approaches but does not commit UMTA to either and commitment should be made. We would expect the Advisory Council on Historic Preservation's comments on this draft environmental statement to address this.

Mr. Peter Benjamin, Washington, D.C.

2. Extensive consideration and discussion is given to historical and architectural aspects of cultural resource values, but very little evaluation effort was expended on the probability of archeological values to be affected by all aspects of this project (including waste disposal sites). While we do not intend to dispute the negative comments of Dr. Robbins and Mr. Sullivan, we do feel that a more detailed discussion is in order regarding archeological values. Numerous historical facts mentioned in this draft environmental statement and the general understanding of past human activities in the project area would lead a reader to an expectation of a reasonably high potential for exposure or disturbance of archeological material. In conjunction with, or in addition to, the mitigative Memorandum(a) of Agreement between UMTA and the Advisory Council on Historic Preservation, we would recommend that a detailed/systematic plan for treatment of any archeological values found during construction operations be made a commitment upon selection of any alternative.

Geologic Resources:

- [4] We suggest that the possible occurrence of earthquakes be taken into consideration in the design and location of the proposed mass transit facilities. The Boston area is subject to earthquakes of low occurrence rates, with intensities capable of causing moderate to major damage. Most of the transit facilities will be built in or on unconsolidated sediments and fill, which are likely to experience relatively high shock-wave intensities.

Water Resources:

- [5] The hydrology portion of subject environmental statement has been reviewed and found generally acceptable. Hydrology is discussed in Volume I, Chapter II, pages 88-94.
- [6] We find the water-table description on page II-88 consistent with data of the U.S. Geological Survey. Basin elevations described on pages II-89-92 are 100 feet high when referenced to mean sea level.

Mr. Peter Benjamin, Washington, D.C.

- [7] The USGS topographic sheet, Lexington quadrangle, shows the elevation of the Mystic Lakes, Spy Pond, Fresh Pond, Clay Pit Pond, Little Pond, Little River, and Alewife Brook all less than 10 feet. If the 100-foot elevations are to be used, some type of correction should be mentioned.
- [8] On page II-93 the drainage area of Mill Brook is described as 2.15 sq. miles. A rough calculation on the Lexington quadrangle indicates there is approximately 3-1/2 sq. miles in the contributing water shed upstream from the confluence of Sickie Brook and the Arlington Reservoir overflow. The drainage area downstream from that point is approximately 2.15 sq. miles. Computation of peak discharge for the 5-, 25-, and 100-year storms, using the USGS publication, "Flood Magnitude and Frequency of Massachusetts Streams," is about 150, 220, and 290 cubic feet per second, respectively. The culverts and closed conduits spoken of on pages II-93, 94 should accommodate the 5-year storm, but because of poor hydraulic properties, the 25-year flood will undoubtedly cause some flooding. The 100-year flood will definitely exceed the capacity of the structures mentioned.

Fish and Wildlife Resources:

- [9] On the whole, this document does a creditable job of outlining the probable ecological impacts of construction, operation, and maintenance of the subject extension.
- [10] On pages II-149 to II-151, the impacts of disposal of excavated material are addressed. While the impacts of disposing this material in ecologically sensitive areas and measures to avoid this are set forth, methods to recycle this depletable resource do not appear to be presented. This national goal published in Section 101 of the National Environmental Quality Act should be addressed.
- [11] The selection of symbols for Marsh (narrow-leaved), Wet Meadow (herb-grass), and Seasonally Flooded Flats (sapling shrub) was extremely poor in Figure VI-14 (Alewife Wetland Vegetation Categories). This should be corrected in the final environmental impact statement so they can be differentiated.

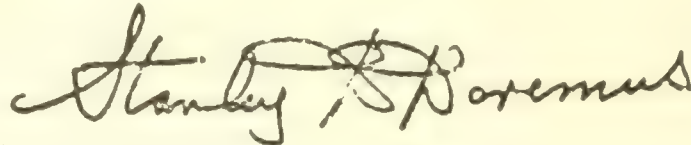
Mr. Peter Benjamin, Washington, D.C.

- [12] On page X-2, paragraph 4, the impacts of construction activities on the streams to be crossed are summarized. The Little River (Ecological impact analysis on page VI-88) should be included in this summary.

Summary Comments:

The Department of the Interior would offer no objection to Section 4(f) approval of this project.

Sincerely yours,



Deputy Assistant Secretary of the Interior

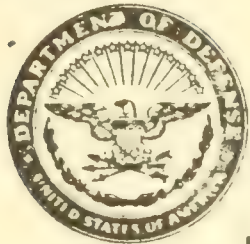
Mr. Peter Benjamin
Director
Office of Program Analysis
Department of Transportation
Urban Mass Transportation Administration
Washington, D.C. 20590

U.S. DEPARTMENT OF INTERIOR, January 7, 1977

<u>Paragraph Number</u>	<u>Response</u>
2	All provisions of Section 4(f) of the Department of Transportation Act of 1966, have been adhered to during the planning and preliminary design phases of this project.
3.1	Compliance with the requirements of Section 106 will be accomplished by means of the second course of action described on page 3 of Exhibit B of Appendix G. (See Exhibit O, Memorandum of Agreement).
3.2	Steps have been taken to contract the services of the Brown University Archaeological Laboratory to undertake studies of the proposed Project alignment for possible archaeological material. The study will be a two phase study consistent with the requirements for archaeological investigation as established by the Massachusetts Historical Commission. If archaeological finds are uncovered during construction, all construction activities will be ceased to allow the Project Archeologist to conduct an assessment of the finds. The exact procedures which will be followed during such occurrences will be defined in the Phase 1 Archaeological Study.
4	Above ground structures and portions thereof shall be designed to safely withstand earthquake lateral forces prescribed by the Massachusetts State Building Code. Earthquake effects on the shell of underground structures and portions thereof shall be investigated during design development phases.
6, 7	Basin elevations described on pages II-93 II-96 are referenced to the Metropolitan District Commission's datum which is U.S. Geological Survey elevations plus 100 ft. A correction height has been added to all appropriate graphics.
8	This information on the Mill Brook drainage area comes directly from the "Mill Brook Hydrological Flood Plain Study", prepared in 1974 for the Arlington Conservation Commission.

U.S. DEPARTMENT OF INTERIOR, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
10	Discussion on recycling has been added to the "Construction Impacts" section of Chapter II under the heading <u>Disposal of Excavated Materials</u> . See page II-188.
11	Symbols on Figure IV-14 have been changed to make them clearer.
12	This description has been added to the Section 4(f) Statement contained in Chapter II. See page II-147.



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDPL-R

4 January 1977

RECEIVED

JAN 10 1977

UCA-30

Mr. Peter Benjamin
Director
Office of Program Analysis
Department of Transportation
Urban Mass Transportation Administration
Washington, D.C. 20590

Dear Mr. Benjamin:

- [1] The Draft Environmental Impact Statement, Red Line Extension Harvard Square to Arlington Heights, Boston, Massachusetts, has been reviewed.
- [2] It has been noted that a Department of the Army permit will be required for the discharge of dredged or fill material associated with the relocations of Alewife Brook/Little River and Mill Brook including contiguous or adjacent wetlands under Section 404 of the Federal Water Pollution Control Act Amendments of 1972. The Final Environmental Impact Statement should specify this information.
- [3] The impacts associated with these actions appear to be adequately assessed, and favorable mitigating measures have been described. We therefore have no comments on the Draft Environmental Impact Statement.
- [4] However, for your information, please be advised that reconnaissance scope studies for providing local flood protection along Mill Brook in Arlington have been initiated. These preliminary investigations indicate that there is sufficient economic justification to permit Corps of Engineers participation in construction of a channel improvement project, extending about 14,000 linear feet, from Arlington Reservoir to Lower Mystic Lake. Further detailed studies will be accomplished under special continuing authority contained in Section 205 of the 1948 Flood Control Act, as amended. However, such studies can only be made upon approval and funding by the Chief of Engineers. A Reconnaissance Report recommending funding for detailed engineering studies will be forwarded to the Chief of Engineers in January 1977.



NEDPL-R

Mr. Peter Benjamin

4 January 1977

- [5] At the request of local officials of Arlington, Cambridge and Belmont, we have also initiated a study of flood problem areas along Alewife Brook in those communities. Economic studies are being conducted at the present time to determine if there is sufficient economic justification to permit Federal participation in the construction of flood control improvements. The study is being coordinated with the MDC and the Mystic River Watershed Association. The reconnaissance study should be completed in 60 to 90 days.
- [6] As a result of our interests in these areas, further coordination between the Massachusetts Bay Transportation Authority and our agency may be helpful. If you have any questions, please contact Mr. William F. McCarthy of my staff.

Sincerely yours,

Donald W. Martin
JOSEPH L. IGNAZIO
Chief, Planning Division

U.S. DEPARTMENT OF THE ARMY, NEW ENGLAND DIVISION CORPS OF
ENGINEERS, January 4, 1977

Paragraph
Number

Response

2

Information has been included. See Volume II, pages VI-113 and VII-64, of the Final Environmental Impact Statement.



U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION ONE

100 Summer Street, Suite 1517
Boston, Massachusetts 02110

MA 23-900 Sue

FILE

JAN 12 1977

Subj: Draft EIS - Red Line North Extension
Boston, Massachusetts

IN REPLY REFER TO
01-25.3A

January 6, 1977

Mr. Peter Benjamin
Director, Office of Program Analysis
Urban Mass Transportation Administration
Washington, D.C.

Dear Mr. Benjamin:

(1) On behalf of Regional Administrator Robert E. Kirby, we have reviewed the subject Draft EIS transmitted with your letter of November 16, 1976. We have the following comments:

1. The DEIS identifies street intersection in Arlington Center and Arlington Heights which should be improved to accommodate increased traffic flows destined for the new transit stations. Since these improvements will be needed as a result of the Red Line extension, any impacts associated with the reconstruction of these intersections should be identified and addressed in this document. This would eliminate the need for a separate environmental document by the involved highway agency to address these impacts at a subsequent date.
2. The proposed improvements in the Harvard Square area will necessitate the detouring of heavy traffic flows over minor local streets such as Quincy Street. An analysis needs to be made to determine if these local streets have adequate capacity to accommodate the increased traffic volumes without excessive delays and disruption.
3. Since it is not certain at this time that the MDPW will construct the Rte. 2 Rindge Avenue Extension Connector, an analysis needs to be made of the impact the Alewife transit station will have on adjacent highways and streets. Of particular concern is the limited capacity of the Alewife Brook Parkway to accommodate increased traffic volumes.
4. On February 9, 1976, this office made a determination on the basis of information provided by MDPW that Section 4(f) did not apply to the Alewife Brook Parkway. Since FHWA and UMTA are sister agencies under DOT, we suggest that UMTA should concur in our determination. However, we would emphasize that FHWA's determination applied only to the Alewife Brook Parkway and not to the Alewife Brook Reservation, which UMTA has also classified as a 4(f) land. While information has not been forwarded


-more-

by the MDPW to date in order for us to classify the Reservation, we are inclined to agree with UMTA's determination that the Alewife Brook Reservation is 4(f) type land.

5. Some of the figures which are used to supplement discussions in the text do not show landmarks or streets alluded to in the text.

We wish to thank you for affording us the opportunity to comment on this document.

Sincerely yours,


W. J. Van Ness
Division Administrator

cc: R. Tierney - MDPW
RFHWA - R. E. Kirby - Regional Office (01-00.4)
P. Stowell - UMTA - Region 1

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
January 6, 1977

Paragraph
Number

Response

1.1

Since the concept of a parking garage has been dropped from the Arlington Center Station plans, these improvements are no longer needed to accommodate traffic flows destined for the new transit station and garage. Proposed kiss-and-ride and bus loading/unloading facilities are minimal and no street improvements other than rechanneling of lanes are recommended.

1.2

As a result of on-going, Pre-grant Engineering design, it has been determined that formalized actions to detour traffic to other streets in the Harvard Square area will not be necessary. Decking and phasing strategies have been developed which will allow traffic to pass through the construction area. Periodic disruptions will occur which will tend to constrain traffic, but these will be of short duration.

1.3

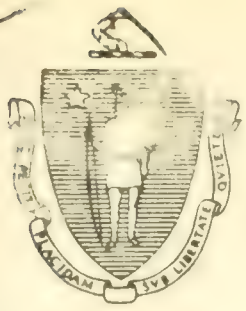
This type of analysis has been added to the Traffic and Transportation and Parking Garage sections of Chapter VI.

4

5

All graphics have been reviewed for proper identification of landmarks and streets.

STATE AGENCY COMMENTS



The Commonwealth of Massachusetts
Department of Community Affairs
Leverett Saltonstall Building, Government Center
100 Cambridge Street
Boston, Massachusetts 02202

FILE
MA.23-9008

MICHAEL S. DUKAKIS
GOVERNOR

WILLIAM G. FLYNN
SECRETARY

January 20, 1977

Mr. Robert E. Patricelli, Administrator
Urban Mass. Transportation Administration
Department of Transportation
Nassif Building
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Patricelli:

I have recently received a letter from Dr. Herbert M. Meyer, Mystic River Watershed Association, Inc. representative to the Alewife Task Force which has been participating in the study of the proposed extension of the MBTA Red Line from Cambridge to Arlington.

They are concerned that their comments and recommendations, which they feel should have been considered in the Draft EIS Study, apparently were not included for review. It appears that their letter to you raises substantive issues.

If you have not already done so, I would very much appreciate it if you could respond to their concerns and indicate to them whether or not their comments and recommendations, as set forth in their letter to you dated November 9, 1976, were in fact considered prior to publication of the Advance Copy of the Draft EIS Study.

Thank you in advance for your kind consideration in facilitating this important aspect of the participatory review process.

Sincerely yours,

William G. Flynn
William G. Flynn
Secretary

WGF/mb

cc: Dr. Herbert M. Meyer
M.R.W.A. Representative to the
Alewife Task Force

MASSACHUSETTS DEPARTMENT OF COMMUNITY AFFAIRS, January 20, 1977

Paragraph
Number

Response

1,2,3

Comments and recommendations received from Dr. Herbert Meyer and the Mystic River Watershed Association have been considered during the process to finalize the Environmental Impact Statement. A Response to the Mystic River Watershed Association's letter of January 28, 1977, is found on page 250 of of this volume.



The Commonwealth of Massachusetts

Metropolitan District Commission

20 Somerset Street, Boston 02108

*Due
Jan. 1/26*

John F. Snedeker
Commissioner

January 25, 1977

RECEIVED

JAN 28 1977

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, D.C. 20590

UCA-30

Dear Mr. Benjamin:

[1] The Metropolitan District Commission is pleased to submit its comments on the Draft Environmental Impact Statement, Red Line Extension, Harvard Square to Arlington Heights, Boston, Mass. MA-23-9003.

[2] The Commission supports the MBTA project and the information included in the Draft Statement subject to the following comments:

[2.1] Chapter II, p. 88 Hydrology

The Commission concurs with the summary of hydrologic characteristics pending the completion of a detailed hydrological study. There may be need to assure that ground water flow is not interrupted by the permanent tunnel.

[2.2] Chapter II, p. 118

The Commission is pleased that no permanent taking of 4(f) land is anticipated in the construction of the Red Line.

[2.3] Chapter II, p. 123

Wet land ecology is not discussed on page 114. What is the proper reference?

[2.4] Chapter II, p. 124

The Commission notes that there will be a short term effect on the stream and adjacent lands during cut and cover tunnel building activities. Mitigating measures must be compulsory and included in the construction contract.

January 25, 1977

[2.5] Chapter III, p. 65

In paragraph 4 line 5 the Commission suggests a change in wording following but..."it is a major regional open space heavily used by both residents and students..."

The Commission feels that many transit users may be bound for the Charles River and that this may increase with the new Kennedy Memorial Park proposed adjacent to the River.

The Commission concurs that the River area is not directly affected by the Red Line construction activity.

[2.6] Chapter VI, p. 70

The Commission notes that 1-2 acres of disruption adjacent to the tunnel is likely to be disturbed. Every effort should be made to minimize the amount of land disrupted. Storage of equipment, materials and temporary spoil piles should be located outside of the Reservation property.

[2.7] Chapter VI, p. 72

How wide and high is the proposed ventilation shaft? Does it need to be fenced? Will it be noisy?

[2.8] Chapter VI, p. 87

It is anticipated that dewatering of the garage construction site will have a major impact on siltation in Alewife Brook. A fuller discussion of mitigating measures for this and other siltation impact should be better described and it should be stated (as it is for noise control) that these measures will be required in the construction contract.

[2.9] Chapter VI, p. 88

There is confusion with VI-70 cited above. P. 88 indicates temporary use of 1-3 acres; P. 70 indicates temporary use of 1-2 acres. This should be clarified and temporary use of all Reservation properties should be kept to an absolute minimum.

[3] There is also an absence of comment on the potential hydrological and other impacts on the MDC land on the easterly side of Alewife Brook Parkway as a result of kiosk construction in the area.

[4] A final general comment should be addressed to the procedures to be used in relocating the various MDC water and sewer lines that lie within the proposed tunnel alignment.

I appreciate the opportunity to submit these comments.

Sincerely,

<u>Paragraph Number</u>	<u>Response</u>
2.3	Wetland ecology is discussed on pages VI-93 thru VI-118. Reference on page II-146 has been changed.
2.4	The garage site is being constructed above the water table. However, the station and mezzanine area are being built below the water table. Page VI-117 of the Final Environmental Impact Statement paragraph <u>Mitigating Measures</u> discusses the construction techniques to minimize siltation of the Alewife Brook. For other measures, see page II-183 of the Final EIS, Siltation and Erosion Control. Agreements drawn up between the Arlington and Cambridge Conservation Commissions and the MBTA, commit the MBTA to a set of mitigating measures to deal with the short term effects of tunnel construction beneath Alewife Brook. See pages II-88 and VI-117.
2.5	Change made. See page III-56.
2.6	The correct statement is temporary use of 1 to 3 acres. Storage of equipment, materials and temporary spoil piles will be located outside of the Reservation property.
2.7	The top of the ventilation shaft is at ground level. It is covered with grating and is approximately 14 feet by 12 feet. It should not be noisy. Fans are being designed with noise attenuators. For specific noise criteria, see Appendix D.
2.8	See page VI-108.
2.9	See page VI-109. The station does displace an amount of existing storage east of the Parkway. The displaced volume will be provided in the retention basin.
3	On the eastern side of Alewife Brook Parkway, a portion of the existing MDC dry weather pond will be taken by the station construction. The proposed retention/detention pond will provide for the storm water storage displaced. The easterly kiosk is not on MDC land.

METROPOLITAN DISTRICT COMMISSION (continued)

Paragraph
Number

Response

4

MDC 48" waterline and sewers are affected by the construction. Relocation of these utilities is presently proposed. These will be discussed in detail with MDC officials. Construction procedures will be developed that are acceptable to the MDC. See Figure VI-13.

ALL

The Alewife Chapter of the Final Environmental Impact Statement has been expanded to include a summary of MDPW's Draft Updated Environmental Overview Summary for the proposed highway improvements. The chapter has also been expanded to include a summary of the recent traffic study prepared for the City of Cambridge by Norman A. Abend, Traffic Consultant. This study discusses the probable impacts of the proposed highway and rapid transit improvements as well as other development that may occur at Alewife. A draft of the entire report is contained in Appendix K.



Metropolitan Area Planning Council
44 School Street Boston, Massachusetts 02108

Carla B. Johnston
Executive Director

(617) 523-2454

January 24, 1977

RECEIVED

JAN 28 1977

UCA-30

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, DC 20590

Dear Mr. Benjamin:

[1] I am pleased to submit on behalf of the Alewife Task Force the following comments on the Draft Environmental Impact Statement, Red Line Extension, Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008.

[2] The Alewife Task Force was established in March of 1975 by the Massachusetts Bay Transportation Authority, the Massachusetts Department of Public Works, the City of Cambridge and the Metropolitan Area Planning Council. Since that time the Task Force has been the primary forum for public discussion of the Alewife section of the Extension. The Task Force represents almost all parties and groups, public and private, concerned with the Alewife portion of the Red Line (NW) Extension. Its members represent the state, regional and local agencies and governments, neighborhood groups, businesses and business organizations, transportation interest groups, environmental groups, and interested citizens.

[3] The following statement has been endorsed by the Task Force as a whole; where opinions differ within the Task Force the comments are qualified by phrases such as "some members feel that", "most members feel that", etc.

[4] GENERAL COMMENTS

1. We support the project at Alewife as proposed, subject to the following comments.

2. The material in the DEIS is difficult to assimilate, due to its length, organization and frequent redundancy. We recognize that the organization of a concise statement for this project is a formidable job. Still, we feel that this draft could be greatly improved, making the essential information and issues more accessible to both layman and professional.

At some points the Draft EIS does not provide enough specifics, or well used estimates. Instead there are phrases such as "Other potential negative effects have received careful consideration", there are "no significant impacts" or impacts will be "mitigated by all reasonable means". Without specifics or examples, such phrases provide little assurance. How is the reader to know what the writer considers "significant", etc.? (e.g. II-145; VI-13; VI-69)

4. At Alewife the Red Line Extension is only one element in a proposed set of transportation/land use developments. The design of the transit station, garage, tunnel and other facilities is closely related to the design of access roads and ramps and the redesign of portions of Route 2 and the Alewife Brook Parkway. Future land use developments in the area are critically related to the transit and roadway designs. The Task Force recognizes that there were reasons for not combining the transit and roadway EIS processes. Nonetheless, many members feel uncomfortable with the failure to achieve better coordination among the several projects. Some believe there should be one organization with overall coordination of the projects in the Alewife area and responsibility for their combined community and environmental impacts.

5. The impacts of recent changes are not presented in the DRAFT EIS. While we realize that a line must be drawn at some point, many members feel that recent developments of major importance should be addressed in the final EIS. Such developments include: alignment changes which affect environmentally sensitive land, such as Russell Field; the recent concerns in the Town of Arlington, which could preclude extension into that town; and the lack of definitive findings of the Minuteman Area Transit Study, which leaves open the possibility of Lexington's opposing the extension, putting more pressure on Arlington not to allow the extension past Alewife. The latter two are significant environmental issues at Alewife since many Task Force members feel that Alewife should not be the end of the line. They believe that the traffic, ecological and general environmental impacts would be significantly greater with Alewife as a terminus, and that a proposal to make Alewife a terminus would require additional studies and consideration.

6. At several points in the Draft EIS a Supplemental Data Volume was referred to. Some members feel that this Volume must be available as a part of the DEIS to allow an informed evaluation of the project.

7. There is no concise summary of impacts that shows tradeoffs between designs, locations and alignments, temporary or permanent project termini or other possible alternatives. Only the impacts of the selected, complete alternative are provided.

SPECIFIC COMMENTS

Route 2 Connector Road

8. The Mass. D.P.W. is proposing to build a road from Route 2 to the "industrial triangle" adjacent to the garage, partly in and partly outside of the "Bedford Branch" ROW where the tunnel will be built outbound from the Alewife station. Some members feel that the effects of this road, and ramps to it from the garage, must be addressed in the EIS. Some feel that the road crosses one of the most ecologically and hydrologically sensitive areas, and some feel that the road is an integral part of the transit project, because the transit garage would not make sense without this or equivalent access to Route 2.

traffic

"Major objective of extension of Red Line - is reduction of traffic through Cambridge." (Response Vol. P. II-21) The DEIS does not quantify this reduction or relate it to the present commuter auto volume through or into Cambridge. Therefore, no understanding can be had of how well the objective can be met. The auto reduction cannot be evaluated. In addition, some feel that the EIS should evaluate the potential reduction in traffic in the metropolitan core, not just Cambridge.

1. It is stated (Response Vol. P. III-60) that a set of tables showing the estimates of Red Line demand by origin will be submitted as supplemental data to the DEIS. The Task Force feels that this data should be available for review along with the DEIS.

tunnel West of Alewife Station

1. The tunnel west of the Alewife station will be built in the B&M right-of-way and run in a boat section under the Little River. If the railroad service is to be maintained during construction of the tunnel it may have to be relocated partly outside of the R.O.W. on MDC or Town of Arlington land. This possible impact on potential 4(f) land is not addressed in the DEIS.

2. The Alewife reservation is the only wildlife habitat left comparatively undisturbed in an essentially urban setting. Some members feel that the construction and operation of the tunnel described above will have permanent effects on wildlife in the wetlands adjacent to the ROW and that the DEIS does not adequately address this potential problem.

13. Some members feel that the (same) tunnel will adversely affect the flow of ground water, and that the DEIS does not adequately address this potential problem. Some believe, in addition, that groundwater from the Alewife area enters the Cambridge water supply via the Fresh Pond Reservoir (though opinions differ on this point), making it more important that groundwater flows be maintained.

"Linear Park"

14. The draft EIS states that "current proposals which may be implemented in conjunction with the Red Line construction at Alewife specify that the east end of the Alewife area - bounded by Route Two, the transit station and the A.D. Little parking lot - would undergo extensive landscape treatment to develop an urban park setting. Thus, one of the secondary impacts of the project would be the loss of dominant natural features from the east end of the wetlands" (VI-89). The draft EIS attributes such proposals to the Alewife Task Force and its sub-committees. It is correct that the Task Force has proposed the Linear Park concept. However, the Linear Park concept does not require the loss of any dominant natural features. That implication should be corrected in the final EIS.

or a diverse assemblage of plants and animals not normally found in such urbanized area" (EAR IX-66; DIES II-123, VI-66). The draft EIS states loss of vegetation and wildlife would not significantly alter the diversity of wetlands species since similar habitats elsewhere in the wetlands would be..." (emphasis of the EIS, VI-86). This passage occurs in a paragraph set within quotation marks. The same procedure occurs again on I-91. The draft EIS does not give the source of these quotations. Some feel that this statement is erroneous - that the wetlands is of limited and closely woven together ecologically, and there are no other similar habitats available to displaced species.

Each of the area impacted by the alignment immediately west of the station is lands or ecologically sensitive. Wetlands are singled out for special consideration above and beyond Section 4(f) of the 1966 DOT Act by DOT Order of May 21, 1975. The purpose of that Order is "that transportation facilities and projects should be planned, constructed, and operated to assure protection, preservation, and enhancement of the nation's wetlands to the greatest extent practicable." In addition, the Order "includes those areas that affect or are affected by the wetland area itself". The Order goes on to enumerate the significant qualities of wetlands and the specific responsibilities of the DOT officials involved. Some members feel that the final EIS should address these concerns of DOT. Some feel that a 4(f) statement should be included; others are uncertain whether these lands fall within the 4(f) category, so official determination has been made.

The Alewife area is sensitive hydrologically, with flooding problems in local communities. Most members feel that the flooding impacts of the transit project, both during and after construction, are not adequately addressed in the

Noise and Vibration Impacts

The DEIS description of noise and vibration impacts says that the technology attempts to isolate all noise and vibration from nearby houses, but it does not specify what design criteria would be used in the final choice of technologies. That is, would people be able to feel or hear passing trains? The Task Force feels that such criteria should be stated in the EIS.

The response to EOE (Response Vol. P. III-46) is unclear. A map showing noise contours should be included in the final EIS.

Construction Impacts West of the Station

Some members feel that the EIS should specify whether there will be any impact pile driving along the right of way in East Arlington, because the construction impacts on adjacent houses would be much greater with this technique than with other techniques.

The discussion on pages II-147, 8 indicates that more detailed soil analysis is required to determine the settlement effects on structures adjacent to the ROW. The Task Force feels that even with existing information the EIS could give a much clearer estimate of what effects are likely and what underpinning or other measures could likely be used in specific areas, such as the East Arlington residential area.

Traffic

"Major objective of extension of Red Line - is reduction of traffic through Cambridge." (Response Vol. P. II-21) The DEIS does not quantify this reduction or relate it to the present commuter auto volume through or into Cambridge. Therefore, no understanding can be had of how well the objective can be met. The auto reduction cannot be evaluated. In addition, some feel that the EIS should evaluate the potential reduction in traffic in the metropolitan core, not just Cambridge.

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Each of the area impacted by the alignment immediately west of the station lands or ecologically sensitive. Wetlands are singled out for special consideration above and beyond Section 4(f) of the 1966 DOT Act by DOT Order of May 21, 1975. The purpose of that Order is "that transportation facilities and projects should be planned, constructed, and operated to assure protection, preservation, and enhancement of the nation's wetlands to the greatest extent practicable." In addition, the Order "includes those areas that affect or are affected by the wetland area itself". The Order goes on to enumerate the significant qualities of wetlands and the specific responsibilities of the DOT officials involved. Some members feel that the final EIS should address these concerns of DOT. Some feel that a 4(f) statement should be included; others are uncertain whether these lands fall within the 4(f) category, or if official determination has been made.

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January 24, 1977

T25

ution

Most members think that air pollution impacts are not treated adequately in DEIS. They concur in the EPA request for queing analysis of traffic circulation to estimate "hot spots", and they do not understand why this analysis should be put off to a future date beyond the EIS. They feel that if localized air pollution problems cannot be avoided, the trade-off with estimated regional air pollution improvements due to the extension should be shown. Comprehensive Air pollution data, submitted to EOEA, is not given to the public via this DEIS nor is it referred to as Supplemental Volume information. They feel it should be included in the final EIS.

poils

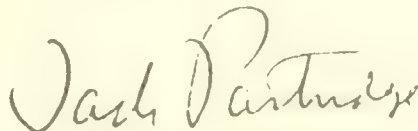
Some members feel that the response to EOEA request (Response Vol. P. III-49) for expanded information on disposal of 1.5 million cubic yards of spoils from the project is inadequate. What disposal areas are proposed? What contacts on feasibility and acceptability have been made? Where is the survey for planning purposes? Because of past incidents, some members are very concerned about safety measures at disposal sites. We note that tentative agreement has been reached with the City of Cambridge on spoils since the writing of the draft EIS.

onomic Impact

It is stated on page III-93 of the Response Volume that the extension from Harvard Square to Arlington Heights is expected to increase the MBTA deficit by .1 million annually (1974 dollars). Some members feel that this information could be presented in more detail and in a prominent place in the EIS - that is is economic impact on Boston area people and all concerned should have access to this estimate.

Please contact me if you have any questions on the above.

Yours truly,



Jack Partridge
Acting Chairman
Alewife Task Force

/cmn

: Donald M. Graham, MBTA
Alewife Task Force Members

Paragraph
Number

Response

4.2

Since the public hearing of March 1976, the Red Line Extension Environmental Impact Statement has changed considerably because of constant updatings and revisions made in response to Public Hearings and review comments, new or changing policies, and new information coming out of the Pre-Grant Engineering, Joint Development Studies, and Minuteman Area Transportation Study. These modifications, changes, and revisions to the text contributed somewhat to the organizational deficiencies of the document and the several requests for the inclusion of back-up material, e.g., air quality and noise methodology made it impossible to reduce its length. However, most recently the text has been restructured into a more complete and concise document. Much of the outdated and no longer relevant material has been deleted. Substantial additions have been made in the area of energy and Section 4(f) considerations.

4.3

Quantification of impacts has been attempted wherever possible. However, the level of significance of some negative impacts such as noise and air quality degradation during construction cannot be quantified until precise engineering methods and techniques are known and exactly when and where they will occur. Such information will or already has come out of the Pre-Grant Engineering studies. In any case, impacts will not be allowed to exceed acceptable limits or levels set by controlling criteria.

4.4

Close coordination has been maintained among the various Federal, State, and local agencies involved throughout the project planning phases.

ALEWIFE TASK FORCE, (Continued)

Paragraph
Number

Response

4.5

Alignment changes which affect environmentally sensitive lands such as Russell Field are discussed in the Section 4(f) Statement contained in Chapter II of the Final Environmental Impact Statement. A sketch of the proposed alignment as it crosses Russell Field is included with the text discussing impacts to this facility. The entire Section 4(f) Statement has been expanded since the publication of the DEIS. New material has been added with respect to changes in the Project and related changes in impacts. See pages II-127 through II-184.

ALEWIFE TASK FORCE, (Continued)

Paragraph
Number

Response

- A summary of the Minuteman Area Transit Study (MATS), Phase I, has been incorporated as part of Chapter VIII. Preliminary schematic designs for the proposed Arlington Heights Station and Parking Garage have been revised with input from the MATS study.
- 4.6 All information previously referenced as being contained in the Supplemental Data Volume (SDV) is now contained in the Appendices of the Final Environmental Impact Statement. This includes material on air quality and noise impact assessment methodology and backup data. Alternatives were discussed and compared for each of the line and station segments. Included with the text for each of the station areas are tables which show a summary comparison of alternatives. See Figures VI-6, III-13, and V-5 for examples.
- 4.7 Alternatives and their impacts to the project alignment and transportation mode are discussed in Chapter IX.
- 4.8 Chapter VI, Davis Square to Alewife, has been expanded to include discussion of the impacts of the proposed highway improvements at Alewife. This new information is taken from the MDPW's draft Updated Environmental Overview Summary for the Alewife highway improvements. More detailed information concern impacts to the Alewife Brook Reservation will be forthcoming from the proposed MDC study of the Mystic River Watershed.
- 4.9 A summary of the recent traffic study prepared for the City of Cambridge by Norman A. Abend, Traffic Consultant, has been included in the Alewife chapter. See page VI-31. This study discusses the probable impacts of station and garage development on traffic flows in and around Alewife. A draft of the entire Report is contained in Appendix K.

ALEWIFE TASK FORCE, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
4.10	Information on demand origins has been added to the Final Environmental Impact Statement as Appendix I.
4.11	The proposed construction through the Alewife Brook Reservation is for a tunnel/cut-and-cover. It is proposed that the Lexington Branch will be abandoned prior to the start of tunnel construction.
4.12	<p>This issue has been addressed in Chapter VI, pages 117 to 119. Construction would occur in that portion of the Alewife wetlands which is presently highly disturbed. Industrial and transportation facilities border the wetlands and pedestrian usage of the area is high. Species of wildlife present have adapted to these conditions. Short-term impacts to wildlife would occur during construction due to the displacement of some wildlife habitat resulting in potential reductions to species populations. Following construction, the disturbed area would be revegetated with natural species, again providing available habitat for some wildlife.</p> <p>Major disturbances resulting from construction would be limited to a small area along the eastern edge of the wetlands having the least value in terms of overall ecological functions of the wetlands. The most ecologically sensitive portions of the Reservation wetlands, particularly for wildlife purposes, are located further west of the construction zone and would not be impaired by the Project.</p>
4.13	See VI-117.
4.14	This proposal to develop the eastern end of the Reservation was made in 1975 by the MDC. However, it may no longer be valid. Any reference to the Alewife Task Force as originator of this proposal has been deleted.

ALEWIFE TASK FORCE, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
4.15	Similar habitats, as well as habitats of higher quality than those within the construction area are present in portions of the Alewife wetlands which would not be affected by construction. Species displaced during construction may experience some mortality; others would successfully migrate to similar habitats in adjacent areas. This would result in some reductions in species populations. Diversity of species would not be affected, however, as species found in the construction area are also found in the unaffected wetlands areas.
4.16	A Section 4(f) Analysis is being filed as part of the Final Environmental Impact Statement. See Chapter II, pages II-127 through II-184.
4.17	See pages VI-105 through VI-112.
4.18	Acoustical design criteria is to be predicated on noise and vibration levels stated in the American Public Transit Association (APTA) Standards for stations, and wayside community noise and vibration levels. The criteria covers maximum air-bourne noise levels from train operations and ancillary facilities, and groundbourne noise and vibration levels from train operations. APTA creteria are established to minimize annoyance of rapid transit noise although it may be detectable.
4.19	Noise contours do not apply to the presently proposed project as it is in either tunnel/deep-bore or in tunnel/cut-and-cover for its entire length.
4.20	The geotechnical work done to date in the Pre-Grant Engineering phase indicates that the more likely ground support walls are sheeting or diaphragm walls (slurry walls). Neither of these systems will have any impact on the East Arlington residential areas.

<u>Paragraph Number</u>	<u>Response</u>
4.20 (Cont.)	If a system consisting of soldier pile and logging were to be utilized, the piles would be placed in a pre-augered hole and then driven a few feet to its final elevation. A continuous pile driving operation will not take place.
4.21	The tunnel/cut-and-cover is not anticipated to have any effects on the residential structures in East Arlington. None of these structures needs to be underpinned. Should further soils analysis show that the protection of certain structure, is required, the slurry wall technique will be used. This technique is also being used to protect Harvard Buildings and other large structures along Massachusetts Avenue in Cambridge.
4.22	<p>Microscale analysis included CO air quality evaluation on a station specific scale was performed for all six stations. These analyses considered the motor vehicle activity induced by parking garages and stations. Detailed discussion of this analysis is given in Appendix H, and the results are presented briefly in the Air Quality sections of each of the six station chapters. For Alewife see page VI-112.</p> <p>The Pre-grant Engineering studies for the garages at Alewife and Arlington Heights have or will have provisions for the study of air pollution problems within these facilities.</p> <p>The comprehensive air pollution data, submitted to EOE, is now included as Appendix H to the Final Environmental Impact Statement.</p>
4.23	The major disposal site for excavated material is the Cambridge City Dump. The MBTA and the City have been negotiating an agreement that would utilize the spoil to "reclaim" the dump area for recreation and other uses. The Cambridge Recreation Commission has indicated an interest in obtaining fill to raise the level of Russell Field to provide better drainage. The Town of Arlington has indicated an intent to replace the peat deposits at Magnolia Street playground. These alternatives coupled with the potential to recycle the excavated

ALEWIFE TASK FORCE, (Continued)

Paragraph
Number

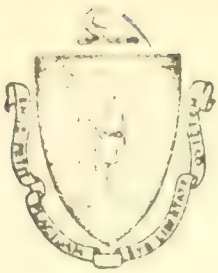
Response

4.23
(Cont.)

material will be investigated in the final design phase of the project following more extensive soil investigations. The specifications will require contractors to provide positive safety controls at all construction sites and disposal areas.

4.24

Additional explanation of the effects the Red Line Extension will have on the MBTA deficit is given on pages II-52 and II-52a.



PAUL GUZZI

Secretary of the
Commonwealth

The Commonwealth of Massachusetts

Office of the Secretary

Massachusetts Historical Commission

294 Washington Street Boston, Massachusetts 02108

(617) 727-8470

RECEIVED

See

1/5

December 20, 1976

Mr. Peter Benjamin
Director, Office of Program Analysis
Department of Transportation
Urban Mass Transportation Administration
Washington, D.C. 20590

Re: Draft EIS - Red Line Extension from Harvard Square, Cambridge to
Arlington, MA

Dear Mr. Benjamin:

- [1] The Massachusetts Historical Commission has reviewed the Draft EIS for the above project. We commend you for the thoroughness of the report and for the careful consideration of historic resources in the 4(f) Statement.
- [2] We are pleased to see that the comments in our letter of January 16, 1976 to Mr. Domenic E. D'Eramo have been taken into consideration and that retention and reuse of the 1928 subway kiosk is being studied. However, Figure III-23, the perspective drawing of the proposed Harvard Square area, does not include this historic structure.
- [3] Monitoring vibrations of the First Parish Unitarian Church in Cambridge and other buildings along the right of way in Arlington should satisfactorily mitigate any adverse impacts on those buildings, providing necessary action is taken if vibrations exceed the acceptable limit.
- [4] As plans for the project proceed, we will review the designs for all above-ground structures and landscaping adjacent to National Register districts in Harvard Square and Arlington Center. This review, along with review by the appropriate local historical commissions, should insure that any potential adverse impacts to these historic resources are avoided or mitigated.

page two

December 20, 1976
Mr. Peter Benjamin

- [5] The Draft EIS (pp. II-86 - II-88, Fig. II-1B-E) and discussions with Mr. Charles Stuart, MBTA, indicate that the ground to be impacted is either well below the postglacial land surface or highly disturbed areas of artificial fill. Significant archeological properties are unlikely to occur in such deposits. Mr. Stuart has commented by telephone that more detailed borings are being undertaken in portions of the construction area. The records of these borings should be investigated to better determine whether any natural post-glacial soil deposits remain within the construction areas and the probability of these areas containing significant archeological resources. If a high probability of significant sites existing is determined, a plan for the investigation of these areas should be devised.

Sincerely yours,

Elizabeth Reed Amadon

Elizabeth Reed Amadon
Executive Director
Massachusetts Historical Commission
State Historic Preservation Officer

ERA/MDW/etd

MASSACHUSETTS HISTORICAL COMMISSION, December 20, 1976

<u>Paragraph Number</u>	<u>Response</u>
2	See Appendix G, Exhibit O, Memorandum of Agreement between MBTA and the SHPO.
3	If vibrations exceed acceptable limits, steps will be taken to correct the situation.
4	All designs of Project facilities which could potentially impact historic resources will be reviewed with the State and local historical commissions.
5	Steps have been taken to contract the services of the Brown University Archaeological Laboratory to undertake studies of the proposed project alignment for possible archaeological material. The study will be a two phase study consistent with the requirements for archaeological investigation as established by the Massachusetts Historical Commission. If archaeological finds are uncovered during construction all construction activities will be ceased to allow the Project Archaeologist to conduct an assessment of the finds.



EVELYN F. MURPHY
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

May 20, 1976

Robert Kiley, Chairman
Massachusetts Bay Transportation
Authority
500 Arborway
Jamaica Plain, Massachusetts
02130

Dear Chairman Kiley:

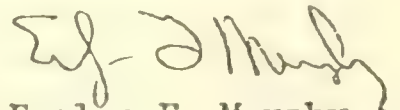
I have today issued a statement that the Draft Environmental Impact Report on the proposed Red Line Extension, Harvard Square to Arlington Heights, does adequately and properly comply with General Laws, Chapter 30, Section 62. However, there are a number of areas in which the report can be improved, as detailed in my statement.

Overall the report is an impressive document, and deserves special recognition on several features:

- * The Linear Park concept has emerged as an intriguing and obtainable goal which would restore the parkway character of Alewife Brook and Fresh Pond Parkways, and preserve, improve, and expand the natural and park lands in the Alewife area. The MBTA, the Alewife Task Force, and the consultant are to be commended for their outstanding efforts.
- * Extensive design work, community contacts, and thorough discussion of alternatives has led to a consensus for Harvard Square. Further, the community liaison program conducted by the MBTA and its consultants has proven to be a significant factor in the wide-spread support for this project.
- * The draft report contained excellent graphic techniques throughout; the project alignment profile maps in Volume I were especially descriptive and clear. Descriptions of station locations and existing conditions were also lucid and straightforward.

The draft report reflects the many hours of labor expended by all parties involved in the planning of this project. While considerable momentum has been generated, my statement expresses some concern over several points which need to be addressed. The necessary additional analysis is of manageable proportions, and will hasten the realization of the Red Line Extension.

Sincerely yours,


Evelyn F. Murphy
Secretary

EFM/REG/arm

cc: Fred Salvucci, Secretary, EOTC



EVELYN F. MURPHY
SECRETARY

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

STATEMENT OF THE SECRETARY
ON
DRAFT ENVIRONMENTAL IMPACT REPORT

[1] The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the below referenced project does adequately and properly comply with Massachusetts General Laws, Chapter 30, Section 62 and the regulations governing preparation of environmental impact reports. There are however a number of issues which should be addressed in the Final Report. These matters are set forth in more detail below.

Environmental Affairs File No. 02082

Submitted By: Massachusetts Bay Transportation Authority

Date Received: March 15, 1976

Project Identification: Redline Extension, Harvard Square
to Arlington Heights

[2] The Executive Office of Environmental Affairs has had the benefit of a review of this Draft Report by the New England Consortium on Environmental Protection. A copy of this report is appended and is incorporated herein by reference.

[3] 1. Supplemental Data Volume

The Supplemental Data Volume was referred to several times in the text of the report, but the document has yet to be produced by the MBTA. The unavailability of this document presented a serious obstacle in a complete review of the draft report. Referenced noise contour maps, CTPS memos on demand, (P IV-42) air pollution tables and data, and other pertinent information contained in the Data Volume should have been submitted along with the draft EIR.

Since the Supplemental Data Volume was not available for review, I must reserve the option of commenting on its contents when it is produced by the MBTA. Those comments should be considered as an addendum to this statement at the time they are issued, and should be addressed in the final EIR when it is submitted to me for review.

2. Station Area Impacts

A) Alewife

Development pressures on the industrial triangle and the W.R. Grace property will result in activities which will pollute to some degree. The draft EIR has not considered the potential adverse environmental impact of this future development. For example, expanded shopping facilities may induce greater traffic flows through the area resulting in increased CO levels and general congestion. Given that the proposed Red Line Extension will have a direct effect on land uses in the Alewife area, the polluting potential of the induced land use activities should be examined in addition to those impacts directly resulting from the project construction and operation. See also the NECEP comments on Joint Development.

In regards to auto traffic around Alewife, there is no indication in the report as to what average daily traffic levels are expected through the Alewife Brook area with the Alewife station, through the years of 1975 to 2000. The report, on page IV-39, states that "approximately 2,000 vehicle trips could be eliminated from Cambridge and Boston streets during peak hours." This would seem to imply at least a drop in rate of growth of ADT in the Alewife area. Although this traffic interception has been claimed as a benefit, it has not been clearly demonstrated with ADT data in the report. Tables IX-3 and IX-4 seem to indicate that a sharp rise in ADT can be expected with the Red Line Extension.

The final report should describe the total increase in daily traffic from all directions between 1975 and 2000 at five year intervals. The total number of vehicle movements generated by the Alewife station should be listed for the same time frames, and then compared to the total increase. This should reveal the degree, if any, in the growth of highway movements in the Alewife station area. The analysis should be done for each of two assumptions: (1) the terminus at Alewife Brook, and (2) temporary terminus at Arlington Heights. The report should also indicate where this traffic will be going in Cambridge.

B) Arlington Center

Considerable controversy has arisen over the proposed parking garage and its proximity to the St. Agnes' Parish Church and school. It is unfortunate that the Arlington Center Task Force and the Parish were not mutually involved in site selection earlier in the planning process, although I understand that the situation has been remedied.

While the Arlington Center transit proposals follow very closely the town redevelopment plans for parking and joint development, the draft EIR has not adequately considered impacts of the garage and alternative locations and/or design. The Parish church and school will be a sensitive receptor of garage impacts both during construction and operation; these impacts must be minimized through good planning and design, and methods for doing so should be presented in the final EIR.

As with the Alewife station analysis, the analysis of Arlington Center impacts did not consider the polluting potential of induced land uses in the City. Page V-26 of the draft EIR states that approximately 250,000 square feet of new retail space, 280,000 square feet of office space, and approximately 1,500 additional housing units are estimated to be constructed by 1990 with improved transit.

This type of development will have significant effects on traffic congestion, air pollution levels (especially carbon monoxide), noise, and other development related impacts. The final EIR should make an attempt to determine the physical impacts of the transit induced development and gauge the degree of interaction with those impacts already discussed in the report.

3. Noise

The noise assessment method and conclusions appear to be quite good. Relative assessment was done having continuously sampled four sites, and 20 short term sample sites. However, the short term sampling method and location of sampling sites, referenced to the Data Volume, was not available. Area categories which are exposed to noise levels in excess of the noise levels identified on Table II-4 are not identifiable since noise contour maps were not included in the draft report. The noise contour maps should be made available in the final report.

Noise impacts may be severe around several sites during the construction phase. While specific mitigating measures cannot be proposed at this point in the project planning phase, it is possible to identify activities along the proposed route which may be severely affected by noise during construction. This description should be presented in the final report.

Before implementation of the project, the MBTA should determine the special provisions which will be needed in the contract documents to minimize or eliminate adverse construction noise impacts, and afterwards must be committed to enforcing the provisions of the contracts.

4. Energy Impacts

The discussion of energy impacts from the proposed project can be improved in two ways:

- a) estimated energy savings due to the project should be calculated by examining the project itself instead of Los Angeles' transit system.
- b) net energy savings should be calculated under several different assumptions.

The NECEP review explains these two points further.

The draft EIR also did not explain where the power to run the Red Line Extension will come from, what type of fuel will be used, how much fuel will be used, and what incremental pollution this will add to the metropolitan air shed. Some analysis should be presented in the final EIR.

5. Construction Phase

Although temporary in nature, construction phase impacts can be among the most severe environmental impacts of the transit extension project, particularly where construction will be staged over a period of several years. This area merits more complete consideration in the final report.

Four aspects of the construction phase need to be emphasized: (a) Air emissions from demolition, excavation, and construction will need to be carefully controlled; (2) the ultimate disposal of demolition and excavation debris may pose a problem, particularly in view of the limited availability of approved landfill locations; (3) noise from on-site

activity and trucking should be controlled and minimized; (4) potential alterations of the groundwater regime should be avoided to minimize impacts to water supplies to water supplies, and adjacent structures.

In my judgement, the final report can best deal with these problems by proposing and establishing a Construction Phase Review Team. This team should consist of the MBTA, officials from each town along the route, representatives of project area citizen groups, project contractors, and the state Department of Environmental Quality Engineering. This team should meet early in the design and development phase to identify and resolve potential problems. Later, monitoring to assure that identified procedures are followed should be conducted. The commitment to such a process would be an important feasible measure to minimize impacts and would be the best way to deal with a host of concerns which can only imperfectly be identified at this stage of the development process.

6. Miscellaneous Issues

(a) The draft EIR does not indicate where the maintenance facilities for the Red Line Extension will be located and the impacts associated with the facility. This should be explained in the final report.

(b) One of the objectives of the Red Line Extension is to provide a transportation alternative to those individuals who find it necessary to drive automobiles into the core area. The decision to use the transit line will be effected somewhat by the fare imposed on the transit user. The final report would benefit from a discussion of expected fare practices on the Red Line Extension and their inter-relationship with passenger levels.

7. Conclusion

Before proceeding to the preparation of a Final Report, the MBTA should carefully consider all of the comments received from state agencies and others, including this statement. During the preparation of the Final Report, the staff of this office will be available to advise the MBTA.

[4] Since the construction phase of the project may require permits and licenses from other state agencies, for example the Metropolitan District Commission, the Department of Environmental Quality Engineering, and the Department of Public Works, the Final EIR should be jointly submitted along with these other agencies to avoid delay and future duplication of effort.

5-20-76
DATE

Evelyn F. Murphy
Evelyn F. Murphy, Secretary

EFM/REG/arm

Paragraph
Number

Response

3.1

Appendices A through I contained in Volume II of the Environmental Impact Statement include materials previously contained in the Supplemental Data Volume. Appendix D and Appendix H include methodology and backup material for noise and vibration and air quality analysis. CTPS's memo dated July 18, 1975, "Assumptions and Methodology Used in Demand Figures", has been included as Appendix I.

3.2a

The extent and nature of new development is a function of many variables including economic conditions, marketplace determinants, local land use controls and policies, availability of land, the suitability of the land to physically support various forms of development and accessibility to major transportation networks, which in the case of Alewife relates to Route 2 and Red Line Rapid Transit access.

Because accessibility to the proposed Red Line Station is only one of many variables which may contribute to new development at Alewife, it is almost impossible to estimate the amount of new development and the resulting secondary impacts that could be directly attributable to the Red Line Extension. To make even an approximate estimate would require setting conditions on all other variables which influence development such as zoning controls, economic factors and policy decisions. A whole complex range of development mixes and levels could be generated by varying the assumptions for each land use determinant. This analysis could be performed but its usefulness at this stage of planning is doubtful. Even detailed studies of the Red Line to the South Shore and other newly constructed rapid transit systems (notably the Lindenwold and BART systems) show little

EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (Continued)

Paragraph
Number

Response

3.2a
(Cont.)

correlation between new transit and new development. Preliminary findings of the market study of the Alewife Area being conducted by Gladstone Associates indicates that future development at Alewife is more or less independent of the Red Line Extension, but significantly more dependent on access to Route 2 and the level of zoning.

David A. Crane & Associates, as part of their Urban Design Study for the Alewife area, developed four alternative future land use scenarios. For each of these, they identified potential impacts relative to traffic and other environmental considerations. This information has been included as part of the Alewife chapter to indicate the kind of development that could occur at Alewife with and without the Red Line. Exact and precise or even close approximates of secondary land use impacts at Alewife cannot be made clear until the Alewife Urban Design and Market Studies and the subsequent Cambridge Land Use and Zoning Studies are completed and firm policy decisions on land use are made by the City of Cambridge.

The Alewife chapter of the Final Environmental Impact Statement has been expanded to include a summary of MDPW's Draft Updated Environmental Overview Summary for the proposed Highway Improvements. The chapter has also been expanded to include a summary of the recent traffic study prepared for the City of Cambridge by Norman A. Abend, Traffic Consultant. This study discusses the probable impacts of the proposed highway and rapid transit improvements as well as other development that may occur at Alewife. A draft of the entire report is contained in Appendix K.

EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (Continued)

Paragraph
Number

Response

3.2b

The figures of 250,000 sq. ft. of new retail space, 280,000 sq. ft. of new office space and 1,500 dwelling units are estimates of additional development for the Town of Arlington with the proposed Red Line improvements. These figures are projections for the fifteen year period between 1975 and 1990 and apply to the entire town and not just Arlington Center. Comparable figures for estimated development without the Red Line were 75,000 sq. ft. of retail space, 50,000 sq. ft. of new office space and 1,000 new dwelling units. Thus, the net projected additional development attributed to the Red Line Extension is 175,000 sq. ft. of new retail space 230,000 sq. ft. of new office space and 500 dwelling units. Prorating this development "induced" by transit improvements over fifteen years would mean an annual estimated increase in new development of 11,700 sq. ft. of retail, 15,333 sq. ft. of commercial, and 67 dwelling units. In terms of trip generation, this represents an approximate annual increment increase in traffic of 227 peak hour trips (assuming peak hour trip generation factors of 2.3/1,000 sq. ft. of office, 15/1,000 sq. ft. of retail, and .23/D.U. for residential units).

A parking garage is no longer planned for Arlington Center.

The figure of 227 peak hour trips is less than those attributed to patrons using the Red Line Stations in Arlington and is relatively insignificant when compared to the existing total peak hour trip generation figure for Arlington.

3.3

Locations of sampling sites are shown on Figure II-1a, b, c, d in Volume I of the Environmental Impact Statement. Information on short term sampling methods is given in Appendix D.

EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (continued)

<u>Paragraph Number</u>	<u>Response</u>
3.3 (cont.)	<p>Noise contour maps were prepared for the Alewife to Arlington Heights portion of the project. These maps, however, were based on at-grade and open cut alignment alternatives and are not applicable to the project as currently defined - a tunnel/cut-and-cover through Arlington.</p> <p>Noise sensitive structures and activities which may be severely affected by noise during construction have been identified in various places throughout the text - principally in the Construction Impacts and Historic Resources sections of Chapters II through VIII. A noise specifications will be included in the contract documents. The specification will be enforced by the MBTA.</p>
3.4	<p>New information on energy has been added to the Energy section of Chapter II (see page II-113).</p>
3.5	<p>The impacts of construction activities on air quality are discussed on pages II-181 and X-2.</p>
3.6a	<p>The Red Line cars are presently and will continue to be maintained at the recently opened Cabot Transportation Center in South Boston.</p>
3.6b	<p>Tentatively, the fare structure for the Red Line Extension will be: Harvard, Porter, and Davis Squares - \$.25; Alewife, Arlington Center, and Arlington Heights - \$.50. Parking at Alewife and Arlington Heights Garages would be \$.50 or \$.75 with possible fee reductions for cars with two or more occupants.</p>
3.7	<p>All comments received from State agencies and others concerning the Draft EIS have been carefully considered during the preparation of the Final EIS.</p>
4	<p>The Final EIR will be a joint submission.</p>

EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (continued)

Paragraph
Number

Response

5

The text has been expanded to include more details of construction impact. In the design phase, a great deal of effort will be expended to develop construction staging plans that will minimize disruption. In the pre-grant engineering phase the MBTA is dealing with task forces at all stations. Construction disruption and staging have been discussed at great length with these groups. Although the MBTA is not adverse to establishing a Review Team as proposed, it is felt at this time that the work should be coordinated through the task forces in order to maintain the spirit of mutual cooperation and trust that has been established to date. The MBTA will continue to work with all state, city and town agencies involved in this project.

MUNICIPAL AGENCY COMMENTS



OFFICE OF THE BOARD OF SELECTMEN

TOWN OF ARLINGTON

MASSACHUSETTS 02174

FREDERICK E. PITCHER
EXECUTIVE SECRETARY
TELEPHONE 643-6700

ARTHUR D. SAUL, JR.
CHAIRMAN

ROBERT B. WALSH
VICE CHAIRMAN

ANN MAHON POWERS

MARGARET H. SPENGLER

ROBERT H. MURRAY

January 24, 1977

Mr. Robert E. Patricelli, Administrator
UMTA, Department of Transportation
NASSIF Building
400 7th Street, S. W.
Washington, D. C. 20590

Dear Mr. Patricelli:

The Arlington Board of Selectmen, in accordance with your request, take this opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Red Line Extension from Harvard Square to Arlington Heights. The town has been intimately involved with this project since its inception in 1972. Many meetings of town officials and community groups have been held to study this project and its implications on the Town of Arlington. These official comments from the Town of Arlington are the result of an intensive effort during the last two months to summarize the divergent opinions on the project. Our comments consist of the following five parts:

1. A report on the DEIS prepared by the Selectmen's Transportation Advisory Committee. This committee is a nine-member group of citizens representing many different groups and organizations. Following the publication of the DEIS, this committee conducted two public forums and several public meetings in order to develop its statement. The statement of that committee is endorsed by all of its members.

2. A statement by the Arlington Redevelopment Board. The Redevelopment Board has met weekly during the last two months in open session to discuss and develop its report. That report is endorsed by the full membership of the Redevelopment Board.

3. A detailed page-by-page critique of the Draft Environmental Impact Statement. While some of these comments are editorial, we hope that this portion of the document will be used as a checklist by you and the MBTA in the revision of the DEIS.

January 24, 1977

4. A critique of an advance copy of the proposed Capital Improvement Grant Application. Once again, we have reviewed this document in the context of the position of the Town of Arlington. We urge that our submission be used to correct the existing advance copy of that application.

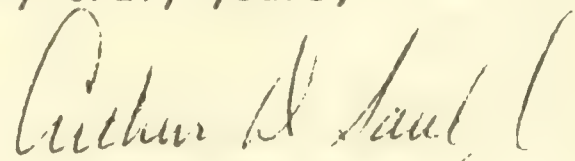
5. As a continuing part of the citizen participatory process, a town-wide nonbinding referendum will be conducted at the annual election on March 5, 1977. The questions and the explanatory material to be placed on the ballot are included as an attachment to this letter.

In an effort to determine citizens' attitudes on the Red Line extension, we commissioned Cambridge Survey Research, Inc., a nation-wide polling organization to conduct a representative town-wide survey. We have included a copy of the results of that survey for your review.

The Board of Selectmen submit our comments for your consideration. Our concerns are legitimate and they summarize and reflect the concerns expressed by citizens of the town. The town's position is clearly stated on pages 2 to 6 of the report of the Arlington Redevelopment Board.

We thank you for the opportunity to comment on the DEIS. We are available to discuss any part of the DEIS and our comments thereon.

Very truly yours,



Arthur D. Saul, Chairman
Arlington Board of Selectmen

ADS/AMcC/md

ARLINGTON BOARD OF SELECTMEN, January 24, 1977

Paragraph
Number

Response

All

See responses to letters from Town of Arlington Selectmen's Transportation Advisory Committee and Arlington Development Board; and Town of Arlington, comments on Draft Environmental Impact Statement.



FREDERICK E. PITCHER
EXECUTIVE SECRETARY
TELEPHONE 643-6700

OFFICE OF THE BOARD OF SELECTMEN

TOWN OF ARLINGTON

MASSACHUSETTS 02174

ARTHUR D. SAUL, JR.
CHAIRMAN

ROBERT B. WALSH
VICE-CHAIRMAN

ANN MAHON POWERS
MARGARET H. SPENGLER
ROBERT H. MURRAY

SELECTMEN'S TRANSPORTATION ADVISORY COMMITTEE

MEMO TO: Arlington Board of Selectmen
FROM: Transportation Advisory Committee
DATE: January 14, 1977
SUBJECT: COMMENTS ON RED LINE DEIS

The Selectmen's Transportation Advisory Committee has been charged with the task of reporting on the Draft Environmental Impact Statement (DEIS) with respect to its overall adequacy as a basis for determining whether or not more detailed planning and design work on the Red Line should proceed. We have not undertaken a page by page critique, nor have we sought to "play expert" on technical work for which we have no special expertise. Our concerns have focussed on the completeness, the credibility and the context of the DEIS and on the views and statements of citizens and agency people that have come to our attention.

One of the fundamental dilemmas which we face is the policy context of the DEIS. It sets forth a proposed Red Line Extension from Harvard Square to Arlington Heights, contrary to the stated town policy for an extension beyond Arlington to Route 128. This policy is based upon the fear that any Arlington Terminus would focus traffic and parking problems on the terminus area, and on the premise that a major transit terminus should end at a point on a major expressway system, not on local streets. The DEIS is silent on what the various environmental, policy and funding factors are which could lead to a realization of the extension to Route 128. Relevant strategies or the process involved have not been defined. Nor has this been articulated by agency representatives. We therefore can only assume that, if the line is extended into Arlington, a station in the Arlington Heights area must be evaluated as being the "end of the line" for the foreseeable future. One question is therefore whether the extension as described in the DEIS is overall environmentally positive to the town, even though in conflict with town policy statements.

The Draft does point to the improved transit service that the Red Line extension as described would bring, and documents the less satisfactory alternatives of commuter rail or Green Line extension. It indicates that, overall, the town and corridor as a whole would have better transit service and that reliance on the automobile would be at least marginally reduced. For Arlington it shows that a depressed alignment could create an attractive linear park system and remove the barrier effect of the present railroad embankment. The proposed routing profiles and construction schemes are, with the exception of the Arlington Heights Station, reasonably described, as is the impact of the loss of freight service. In addition, ridership levels, service and the cost of the project are set forth.

There are, on the other hand, deficiencies in the DEIS which make it impossible to fully understand the impacts of the extension in Arlington. Before listing the areas and items found missing or inadequate, we should pose questions regarding the decision-making and funding process. The DEIS apparently becomes a Chapter in the Capital Grant Application which we are told has not yet been made in final form. If an adequate final document is submitted and the Capital Grant for the extension made, is the future rejection of the project made more difficult if subsequent design work shows it to be undesirable? When does a point of no return occur? Does the Urban Mass Transportation Administration in effect assume the building of a project when a Capital Grant is made? We are led to believe that the Grant provides for the detailed design work necessary to answer specific concerns and for efficient implementation after a final design is agreed upon. If the Grant presupposes building the project, then those sections lacking credible documentation should be removed from the Grant.

The errors or deficient documentation which should be included in a revised DEIS are as follows:

1. Delete references to the acquisition of Russell Common and a parking garage on the Common as being part of the project.
2. As stated earlier, articulate state policy on where the Red Line terminus should be. Explain funding constraints and what justification or documentation is required for an ultimate decision.
3. Present station automobile access traffic volumes to show how the future volumes compare with present traffic experience. How significant is the net change? Describe what will be in terms of what we now understand. Give examples of similar situations on already constructed transit facilities.

4. Detail levels of feeder bus service and show relationship to auto access and transit patronage.
5. Show how changes in the proposed total system effect local bus service.
6. Set forth estimates of how significant the utilization of the proposed extension is on the total transportation needs of each municipality.
7. Estimate what the effect of the Red Line extension and also the complete MBTA Transit Development Program will be on the transit deficit in, say, 1990.
8. In presenting environmental impacts, detail the area of influence of undesirable impacts. For example how many homes are within 100 feet of the track where rumble may be perceptible? Also, if undesirable effects can be eliminated in design, make a commitment to do it or show why the costs would be excessive.
9. Provide decking for the entire line in Arlington.

In revising the DEIS, it is expected that it will be necessary to utilize results of a number of existing or proposed work efforts, including the following:

- Minuteman Area Transportation Study
- Market study indicating development potential around stations
- Joint planning studies for station areas
- Design work defining detailed construction methods and measures to avoid adverse impacts
- Design work or other investigations setting forth refined measures to eliminate hydrological or ecosystem degradation.

We conclude in brief that the DEIS presents the concept of a Red Line extension in Arlington in a way which would make complete acceptance or rejection of the proposal unwarranted until we can assess a properly revised document. The Capital Grant should not be made by UMTA until the deficiencies of the current DEIS are rectified to the satisfaction of the town and the document indicates that the project covered by the Grant will provide substantial net positive benefits.

Selectmen's Transportation Advisory Committee

Alfred Howard, Acting Chairman

Joseph Agri

Murdena Campbell

Robert Davis

Kay Green

Peg Nicholl

Michael Padnos

Thomas Richardson

Frank Sonnenberg

TOWN OF ARLINGTON, SELECTMEN'S TRANSPORTATION ADVISORY
COMMITTEE, January 14, 1977

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- 5.1 All references to the acquisition of Russell Common and a parking garage on the Common as being part of the Project have been deleted from the texts of the Final Environmental Impact Statement and Capital Grant Application.
- 5.2 Overall State policy is reflected in the PMT. This EIS is for a project to Arlington Heights. There may be some modification of the project in the Arlington Heights Station area depending on the outcome of Phase II of the Minuteman Area Transit Study.
- 5.3 Existing and post Red Line traffic volumes and intersection geometrics are shown in Figures VIII-5 and VII-6. As mentioned on page VII-25, traffic volumes cause substantial delays during the peak periods. Implementation of the recommendations on traffic signals, channelization and street-utilization would alleviate, to a considerable degree, traffic congestion.
- 5.4 New information on the Feeder Bus System proposed in conjunction with the Red Line Extension has been added to Chapters II, VII, and VII. See pages II-50, VII-22, and VII-24.
- 5.5 Changes to the existing MBTA bus routing proposed to facilitate implementation of a feeder bus system to serve the Red Line Extension are discussed in Chapter II on page II-50. Table II-18 shows a comparison between the existing and proposed routings and levels of service.
- 5.6 The Final EIS demonstrates this in its basic justification of the proposed extension.
- 5.7 Data has been provided by the MBTA for the last base year for the deficit, as well as percentage of increase for the last year. The variables in estimating to 1990 are too numerous and would be on the basis of the inflated dollars, which is difficult to comprehend. See page of the Final EIS.

TOWN OF ARLINGTON, SELECTMEN'S TRANSPORTATION ADVISORY
COMMITTEE, (Continued)

Paragraph
Number

Response

5.8

In Arlington, approximately 40 homes are within 100 feet of the centerline of the proposed transitway. Since the transitway would be in tunnel, very little if any noise would be heard. Vibrations could be perceivable within the zone of influence. However, these would virtually be eliminated by means of special mitigating measures specified throughout the text. The Authority is totally committed to a program of noise and vibration reduction along the proposed Project. Translation of this commitment into engineering solutions for noise and vibration reduction will take place during the preliminary engineering phases for the Arlington Section.

5.9

The proposed Project will be completely underground through the Town of Arlington. Text in the Final Environmental Impact Statement has been modified to reflect this engineering change.

6

The Final Environmental Impact Statement for the Red Line Extension, including project description, cost estimates, impact analyses, and preliminary station design, has been updated using the most recent information available which has come out of the Pre-grant Engineering work, the Minuteman Area Transportation Study, and the Joint Planning Studies for the station areas. In addition, information and analyses from a draft of the Updated Environmental Overview Summary for the Route 2 improvements at Alewife and the City of Cambridge's traffic study for Alewife have been used to supplement the Final Environmental Impact Statement.

New and expanded Section 4(f) Statement and 106 Case Study have been written and are included in the Final EIS. The Energy, Air Quality, and Hydrology sections have also been expanded or re-written in response to comments on the Draft EIS.

ARLINGTON REDEVELOPMENT BOARD

TOWN HALL - ARLINGTON, MASSACHUSETTS 02124

TELEPHONE 617-642-6700

MEMO TO: Arlington Board of Selectmen

FROM: Arlington Redevelopment Board

DATE: January 21, 1977

SUBJECT: THE POSITION OF THE ARLINGTON REDEVELOPMENT BOARD ON THE
PROPOSED RED LINE EXTENSION OUTLINED IN THE DRAFT ENVIRON-
MENTAL IMPACT STATEMENT

BACKGROUND

The Redevelopment Board is a five-member board created under the Town Manager Act of Chapter 738 of the Acts of 1971 of the General Court of the Commonwealth of Massachusetts. The Board has all the powers of a planning board in the Commonwealth, including the following duties set forth in Section 81C.

"The planning board established under section eighty-one A shall from time to time make careful studies and when necessary prepare plans of the resources, possibilities and needs of the city or town, and, upon the completion of any such study, shall submit to the city council or selectmen a report thereon, with its recommendations. It shall report annually to the city council or to the annual town meeting, giving information regarding the condition of the city or town and any plans or proposals for its development and estimates of the cost thereof..."

Therefore, the Redevelopment Board submits the following report on its critique of the Draft Environmental Impact Statement prepared for the proposed Red Line extension Northwest from Harvard Square to Arlington Heights.

FEDERAL REGULATIONS

UMTA Order 5610.1, dated February 1, 1972, establishes the policy to be adhered to for all UMTA funded projects subject to the National Environmental Policy Act of 1969 as follows:

POLICY. It shall be the policy of UMTA to promote efforts to improve the relationship between man and his environment. In carrying out this policy, UMTA officials shall utilize the various mechanisms and procedures prescribed by this

order to assure thorough consideration and responsiveness to protecting and enhancing the environment in local planning and decision-making leading to application for UMTA project development and review, and in implementing approved plans. Thorough consideration and analysis of potential environmental impacts is necessary at all stages, and no action covered by this order shall be approved or recommended for approval unless the requirements contained herein have been fully complied with.

This departmental policy is a direct response to policy of the Council on Environmental Quality which is as follows:

Policy. As early as possible and in all cases prior to agency decision concerning major action or recommendation or a favorable report on legislation that significantly affects the environment, Federal agencies will, in consultation with other appropriate Federal, State, and local agencies, assess in detail the potential environmental impact in order that adverse effects are avoided, and environmental quality is restored or enhanced, to the fullest extent practicable. In particular, alternative actions that will minimize adverse impact should be explored and both the long- and short-range implications to man, his physical and social surroundings, and to nature, should be evaluated in order to avoid to the fullest extent practicable undesirable consequences for the environment.

EVOLUTION OF THE POSITION OF THE TOWN OF ARLINGTON

The opportunity to participate in transportation planning did not exist until the early 1970's. In 1972, during the Boston Transportation Planning Review, the Arlington Board of Selectmen voted to establish a formal transportation policy. The number one priority of that policy was as follows:

"The position of the Town of Arlington as a matter of policy is that the Extension to Route 128 of the Red Line Rapid Transit is the number one priority and that the position further be clarified that the Board is only interested in the extension all the way to Route 128 and nothing else is acceptable."

On May 3, 1973, at the end of the Boston Transportation Planning Review, the Selectmen issued a statement on the Red Line Extension. That position included the following points:

"The Arlington Board of Selectmen unanimously support the Red Line Extension from Harvard Square in Cambridge through the Town of Arlington via the right-of-way (Boston & Maine—Bedford Branch) to Route 128."

"If the Red Line cannot be implemented as a single package project, the Board does not support any extension of the line beyond Harvard Square in Cambridge."

"The alignment must be underground through the entire town thereby eliminating all grade crossings and potential air and noise pollution."

"We support further studies to determine appropriate station locations in Arlington Center and Arlington Heights."

"We are concerned that this present study (BTPR) did not adequately deal with the specific development of the Red Line beyond Alewife in Arlington. Such an extension is the only viable solution to cope with the current and, which is of even more importance, the future transportation needs of the Northwest Corridor."

On April 16, 1975, the Selectmen restated their position on the Red Line Extension. Additional requirements were included as follows:

"The Board expresses a strong commitment to extending the Red Line from Harvard Square in Cambridge to Route 128."

"We are concerned at this time that the study of the development of the Red Line from Arlington Heights to Route 128 is incomplete."

By January 1976, it became clear that there were strong pressures to terminate the Red Line at Alewife Brook Parkway. The Selectmen, in an effort to prevent this unacceptable alternative, modified their statement to recognize the necessity of the MBTA using different sources of funds and a staged construction program for the extension. The original statement was modified and adopted on February 9, 1976. The full text of the Selectmen's position is part of the record of the public hearing on the project held in Arlington on March 23, 1976. The critical elements are as follows:

"The Arlington Board of Selectmen unanimously support the Red Line Extension as a complete transportation project from Harvard Square in Cambridge through Alewife and then on the B & M Railroad right-of-way to Route 128 in Lexington."

"This position includes a firm commitment to any funding and construction strategy through Arlington Center as the first phase."

"The Board realizes the complexities of an undertaking of this magnitude, and, therefore, recognizes the necessity of adopting a program of phased implementation whereby each succeeding phase is under construction prior to the opening of the preceding phase. We accept this concept."

In addition, acceptance of the project for the next phase of planning and design was conditioned on the following:

"The Town of Arlington's policy on the Red Line is that it must be underground."

"Any parking to be provided in Arlington Center has to be consistent with Arlington's development aspirations which clearly recognize the finite capacity of the street system serving the Center. At a minimum, the town requires that parking be provided on two sides of Massachusetts Avenue. The larger portion of the parking should be located on Russell Common and the second parking supply will be located south of Massachusetts Avenue in the vicinity of Swan Place. The precise design of the parking shall be consistent with the development proposals for Arlington Center. In no instance shall there be more than 350 parking spaces, and the existing municipal parking on Russell Common shall be replaced space for space."

"There shall be no storage of bus or rail vehicles in the Center and the town shall participate in the development of any bus strategies."

"Any decision on an Arlington Heights station must await the results of the Lexington Area Transportation Improvement Study (Minuteman Area Transit Study). The Board strongly urges the speedy completion of the Lexington Area Transportation Improvements Study."

"The Board expresses a strong commitment to extending the Red Line from Harvard Square in Cambridge to Route 128. We are concerned at this time that the study of the development of the line from Arlington Heights to Route 128 is incomplete. This Board reaffirms its intentions to work with all communities which will be served by the Red Line. The Board believes that the Red Line extended to Route 128 is the only viable solution for the future transportation needs of the Northwest Corridor."

The Arlington Redevelopment Board submitted a statement outlining its conditional approval of the project at the public hearing as follows:

NOW THEREFORE BE IT RESOLVED, 1) that the Arlington Redevelopment Board supports the extension of the Red Line underground through Arlington to Route 128 with a station at Arlington Center constructed as part of the first phase of this high priority regional project designed to serve the transportation needs of the northwest corridor, 2) that the Arlington Redevelopment Board stands ready to work on the next phase of the implementation of this project by assisting the MBTA and its consultants in the design and precise location of its elements to ensure their compatibility with the development objectives of Arlington, 3) that the Arlington Redevelopment Board is prepared to assist the MBTA in the design and implementation of an effective feeder bus network that adequately serves the transportation needs of Arlington, 4) that the Arlington Redevelopment Board is prepared to work on a continuing basis through the Lexington Area Transportation Improvement Study (Minuteman Area Transit Study) to arrive at a comprehensive solution for an Arlington Heights/East Lexington station and the ultimate extension of the Red Line to Route 128.

On May 5, 1976, as a result of public concern over the disparities between the official positions of the town and the project as outlined in the Environmental Analysis Report prepared by the MBTA, the Board of Selectmen adopted the following addendum to their position of February 9, 1976.

"The Board of Selectmen will support the construction of the project west of the proposed Alewife Station provided there is a firm and definite commitment relative to funding, a design, in phases as necessary, and to construction as one project completely through the Town of Arlington."

"We will not support a terminus, permanent or temporary, at Arlington Center."

"Nor will the Board support any above-ground parking garage and/or bus terminal at Russell Common."

In September 1976, the town received advance copies of the Environmental Analysis Report and the Capital Grant Application prior to their submission to UMTA. Both documents contained inconsistencies with the Arlington position. On October 4, 1976, the Arlington Board of Selectmen adopted the following motion unanimously:

"Moved: that the official position of the Board of Selectmen is that we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals, namely, that the Red Line Extension in Arlington will be of an underground configuration throughout the Town, that there will be no terminus in Arlington, either temporary or permanent, and that it will ultimately extend to Route 128; further, that although we will cooperate in any way to assist in developing the information, citizen input and plans to accomplish these and related goals and objectives, we rescind our support until the total package has been produced, acceptable to the citizenry of this community. Said action is not to be construed as lack of support for the concept of mass transportation through the development of the Red Line."

On October 20, 1976, the following bill became law in the Commonwealth of Massachusetts:

Chapter 439

AN ACT prohibiting the Massachusetts Bay Transportation Authority from Locating a Mass Transportation Facility Within a Certain Distance of the Arlington Catholic High School.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Notwithstanding the provisions of paragraph (g) and (k) of section three of Chapter one hundred and sixty-one A of the General Laws, or any other general or special law to the contrary, the Massachusetts Bay Transportation Authority shall not construct any mass transportation facility, including but not limited to a rapid transit station and parking garage, on any land located within seventy-five yards of Arlington Catholic High School.

THE POSITION OF THE ARLINGTON REDEVELOPMENT BOARD
ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

On September 9, 1976, the Secretary of Transportation issued a new policy on assistance for major urban mass transportation investments. Section B, entitled Incremental Development relates specifically to the issues confronting the Town of Arlington and the other communities in the Northwest Corridor. It is repeated here for emphasis since it has a direct relationship to the position of the Town.

Incremental Development

Where an area's comprehensive long-range transportation plan calls for the creation of a fixed guideway system, the system should be proposed for implementation incrementally. Initial segments of the system should be proposed in corridors which can justify the need for fixed guideway service within 15 years of the date of the analysis. Each segment should be capable of justification on its own merits.

Corridors which cannot justify fixed guideway transit service within 15 years of the date of the analysis should be provided with levels and types of service appropriate to their needs, with the level of service being progressively upgraded as demand develops. Incremental development aims to ensure that high priority corridors receive initial attention; that appropriate balance is maintained between the transportation requirements of the entire region and those of local communities within the region, and between long range and short range needs for transportation improvements; that flexibility is preserved to respond to changing technology, land use patterns and growth objectives; and that the fiscal burden is spread over a long period of time.

It is clear that the MBTA expansion program, the federal funds currently available, and federal transportation policy will not permit the construction of the Red Line from Harvard Square to Route 128 as one project. The Arlington Redevelopment Board recognizes this condition.

1. IF NOT 128 THEN WHAT IS ACCEPTABLE?

a) Support a Rapid Transit Extension in the Northwest Corridor

There has been and continues to be a strong consensus that a rapid transit extension of the Red Line along the alignment of the Bedford Branch Railroad through Arlington is the only viable long-term solution to the transportation needs of the Northwest Corridor. Congested local streets, arterials and regional highways cannot accommodate the increasing space demands of the automobile. The implementation of this long-term solution will cause short-term problems of disruption and inconvenience during construction. The Red Line

will be an intruder into the existing fabric of the totally developed densely populated community of Arlington. Therefore, in addition to providing desired rapid transit service, the Red Line must support and enhance the social, economic, environmental and development goals of Arlington.

b) The Red Line Must Ultimately Extend to Route 128

A rapid transit line must ultimately end at a place where there is an opportunity for significant intermodal transfer. Route 128 in Lexington is the only place in the northwest corridor where such activities can take place. The ultimate extension of new rapid transit facilities west of Harvard Square to Route 128 has been a firm policy of the Board of Selectmen of the Town of Arlington since 1972. The inner communities of Cambridge and Somerville have also taken this position. This policy recognizes that it may be impossible to construct a rapid transit facility of this length or magnitude all at once; however, there is no acceptable alternative to the ultimate extension of rapid transit to Route 128. The Town of Arlington can accept nothing less than a formal state plan and time schedule that will ensure the ultimate extension of this line to Route 128.

c) Phased Construction

UMTA regulations require that new rapid transit facilities be constructed in usable segments. The Town of Arlington recognizes this fact; therefore, the official position of the town has included a clear understanding and recognition of the fact that a project of this magnitude must be constructed in usable segments. The phase that includes the Town of Arlington must be undertaken as part of the phase of the extension scheduled for completion by 1982. The town cannot accept a program of phased implementation of usable segments that could be discontinued part way through the town. Construction of the new Red Line Extension must be undertaken as part of a firm financial plan that will insure that the project can be constructed through the Town of Arlington as one project.

d) Alewife is Not An Acceptable Terminus

The analysis undertaken by state transportation agencies with extensive citizen participation, as well as the policy statements of affected cities and towns in the Northwest Corridor, has indicated that the proposed Alewife station cannot be the terminus of the Red Line. The impacts of such a terminus, even on a temporary basis, are recognized to be too severe to be acceptable. Route 2 is one of the most heavily traveled roadways in the Commonwealth and is not capable of accommodating the increased demands generated by a terminus. The addition of a transit terminus in that heavily congested area cannot be supported, since such a position would insure that the Town of Arlington would become heavily impacted by cars traveling to the station. Therefore, if Alewife becomes a

recommended terminus, the Town of Arlington urges UMTA to reject the EIS and the Capital Grant Application when filed. Otherwise, Arlington would suffer all of the disadvantages of increased through traffic and none of the benefits of rapid transit.

e) Arlington Center is Not an Acceptable Terminus

Arlington Center cannot be the terminus of the Red Line. It contains many of the major religious, cultural, governmental and retail activities in the town and is also the focal point of several major streets, such as Massachusetts Avenue, Mystic Street and Pleasant Street. The addition of a Red Line terminus at this point with between 8,000 and 10,000 transit riders arriving each day on local streets by foot, car, and bus, would create an excessive burden on the area. The only proper way to provide rapid transit to this area is by providing a station along the Red Line extension that will extend to the Arlington Heights/East Lexington area and ultimately to Route 128.

f) Arlington Heights/East Lexington Station

Since 1973, the Town of Arlington has consistently stated that the planning effort undertaken in Arlington Heights as part of the environmental process is unsatisfactory. The arbitrary determination by the MBTA that no planning or analysis could take place west of the Arlington/Lexington line is totally unacceptable and is inconsistent with UMTA and CEQ guidelines. The Draft Environmental Impact Statement makes no rational analysis of the opportunities west of this boundary. It is totally unreasonable to assume that this draft statement is acceptable until such time as a careful analysis of station alternatives in the Arlington Heights/East Lexington area is undertaken. Such an analysis must clearly show what the impacts of a station in this area would be. No final decision on the proposed extension can be made until such a study is completed.

2. HOW DOES THE TOWN DEAL WITH AUTOMOBILE CONGESTION?

The Extension of the facility beyond Alewife provides a significant opportunity to diffuse the negative impact of traffic concentration on an Alewife terminus. Until such time as the Red Line can be extended to Route 128, an Arlington Center station and a station at Arlington Heights/East Lexington should provide the major mitigating measures to reduce the impact of an Alewife terminus. These stations cannot serve the same function as the regionally oriented Alewife station. Arlington stations must be designed to primarily serve local needs. These stations cannot support large amounts of parking nor can they serve as major regional bus interchange points. Clear and precise measures must be implemented by the town and appropriate state agencies to control on-street and off-street parking. The stations must be made secondary to and supportive of other uses and facilities in the neighborhood.

3. WHAT ARE THE BUS PROPOSALS?

Arlington is heavily dependent on bus transportation. Currently, there is no adequate plan or strategy for new bus service related to the rapid transit extension. The development of a suitable bus strategy is mandatory prior to the approval of the EIS. The new strategy must include a clear delineation of routes as well as the implications on Arlington's share of the MBTA deficit.

4. WHAT ARE THE ENVIRONMENTAL ISSUES?

The alignment of the Red Line extension along the Bedford Branch railroad abuts many residences, parks, and playgrounds in the Town of Arlington. This existing little-used rail line is unlike any other rail line in eastern Massachusetts proposed for mass transit usage. It is a one-track, dead end, underutilized spur. Limited use prevents it from exerting a negative influence on the areas it traverses. It is used as open space. It does not, like most linear transportation facilities, provide a neighborhood barrier. The proposed conversion of this line to intense rapid transit usage requires careful implementation. No section of this line in Arlington should be transformed into an actively used surface rapid transit line, since such a line would negatively impact residential abutters and public open space adjacent to the line. This transportation corridor must be improved in a manner that provides the broadest range of benefits, such as a linear park traversing the full length of Arlington. This can happen only if the line is constructed entirely underground through the town. This is the only acceptable alternative. It is a position that has been made clear by the town since 1972, and it is regrettable that it has not been included in the proposal.

5. WHAT ARE THE CONSTRUCTION DISRUPTIONS?

The extension of the Red Line will mean that heavy construction will be undertaken within the Town of Arlington for a period of two- to three years. The important consideration is how the adverse effects of that construction can be minimized. The railroad right-of-way crosses several important streets in Arlington. Lake Street is a heavily traveled street in East Arlington and must be kept open during the construction period. Massachusetts Avenue in Arlington Center is the most heavily traveled street in the town. Mystic Street, Water Street, Mill Street, Grove Street, Brattle Street, Forest Street, Lowell Street, and Park Avenue provide critical cross-town movement. Through traffic must be maintained. It is impossible to divert traffic to side streets; therefore, the technique of temporary decking or bridging must be utilized where the right-of-way crosses streets. The right-of-way provides an opportunity for construction trucks and equipment to avoid using major streets. All spoils and construction materials should be transported along the right-of-way to the maximum extent feasible.

6. WHAT ARE THE LAND-USE PRESSURES?

The major fear of the Red Line extension is that the Town of Arlington will become "citified". The critical question is whether or not the town can respond to such pressures. The Redevelopment Board feels that there are opportunities for joint development to be undertaken in conjunction with the Red Line. It looks forward to, and, in fact, has planned for this eventuality for the last six years. The Board has prepared, and the town has adopted, by a unanimous vote, one of the most stringent zoning bylaws in the Commonwealth of Massachusetts. That bylaw can be changed only by a two-thirds vote of the Town Meeting. Thus, the town government, and not outside influences such as the Red Line, will decide the future of Arlington. With proper planning, the economic stimulus created by the transit extension can be controlled and used to significantly enhance the town's major retail shopping area located in Arlington Center.

7. WHAT WILL THE FUTURE DEFICIT BE?

The MBTA deficit is a major expenditure over which the Town of Arlington has little or no control. The Draft Environmental Impact Statement provides no meaningful information about the impacts this project will have on the existing MBTA assessment formula as well as modifications currently proposed to that formula. It is presumed that the Red Line Extension will provide more efficient and cost-effective transportation in the Northwest Corridor; such analysis is not shown in the Draft Environmental Impact Statement. Many people anticipate that there will be an increase in the local cost of police and fire if this project is constructed. The EIS should attempt, based on the experience of others, to determine what additional costs might be.

CONCLUSION

This position paper makes it clear exactly what the position of the Town of Arlington is towards the proposed Red Line Extension. The town has consistently supported the concept of mass transportation embodied in the Red Line proposal. Unfortunately, the proposal as outlined in the Draft Environmental Impact Statement differs in several important respects from what the town has consistently supported; that is, a complete underground configuration, no terminus within the town, and the ultimate extension of the transit to Route 128.

The goals of the town are consistent with the policies of the Council on Environmental Quality, and the Urban Mass Transportation Administration. The policy enunciated in this statement is consistent with the MBTA's long-range program for Mass Transportation, with statements made by the Governor of the Commonwealth of Massachusetts and with the Transportation Improvement Program. Therefore, we urge UMTA to withhold final processing of the Draft

Environmental Impact Statement for the proposed Red Line Extension northwest from Harvard Square to Arlington Heights until such time as that draft statement can be revised by the MBTA so that it is consistent with the official position of the Town of Arlington adopted by the Board of Selectmen on October 4, 1976. In addition, it is requested that UMTA not commit a Capital Grant to this project until the Draft Environmental Impact Statement is corrected.

ARLINGTON REDEVELOPMENT BOARD

Stephen Pekich, Chairman

Joseph F. Tulimieri, Vice-Chairman

Edward T. M. Tsoi

Philip J. McCarthy

Irving Stein

Paragraph
Number

Response

1.a
(page 7)

The Authority has worked and will continue to work with the Town of Arlington to develop a project which is mutually acceptable to both parties. Every attempt will be made to enhance the social, economic, environmental and development goals of Arlington. The Authority has already eliminated or modified certain aspects of the project in response to concerns of the Town over potential negative impacts. During the Pre-grant Engineering phases for the Arlington sections, the Authority will continue to reevaluate the project through a coordinated effort with the Town with the objective of minimizing harm from construction and/or final transit operations.

1.b

The project at hand is a Red Line Extension from Harvard Square to Arlington Heights. The Minuteman Area Transit Study is underway and may influence the final project.

1.c

The Arlington segment will be built as one project unit, thus assuring that the project will not be discontinued part way.

1.d,e

The Environmental Impact Statement and Capital Grant Application are for a project to Arlington Heights.

1.f

This issue has been addressed by the Environmental Impact Statement and Phase I of the Minuteman Area Transit Study. Further study will take place during Phase II of the MATS study and during the preliminary design phase for the Arlington Heights Station.

2.

Both the Arlington Heights and Arlington Center Station are being planned as local stations. No park-and-ride facilities are proposed for Arlington Center. Feeder bus service into these stations will not be any more than what currently exists. The majority of new vehicle traffic will come from kiss-and-riders, who for the most part will be Arlington residents.

ARLINGTON REDEVELOPMENT BOARD (Continued)

<u>Paragraph Number</u>	<u>Response</u>
3	A new proposed feeder bus network is discussed on pages II-50 of the Final EIS. Estimated peak hour arrivals for the Arlington Center and Heights Stations are given in Tables VII-11 and VIII-10.
4	The proposed project is a tunnel/cut-and-cover through the entire Town of Arlington.
5	The impacts of construction activities are discussed in detail on pages II-185, VI-113, VI-69, VIII-68 of the Final Environmental Impact Statement.
6	The Authority concurs with the Town of Arlington on the subject of land use planning and pressures for development. Under the Joint Development Program, UMTA will provide financial support to Arlington to study land use issues and concerns around the Arlington Station areas.
7	Additional information on the impacts of the Red Line Extension on local assessments and the MBTA deficit is given on page II-52 of the Final Environmental Impact Statement. Cost-effectiveness analysis is included in Chapter IX, Alternatives.

TOWN OF ARLINGTON, January 24, 1977
COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT, PART 3 and 4

Paragraph
Number

Response

All

See attached copy of annotated pages of DEIS.
Underlined text refers to Arlington's comments.
Responses to comments are written in the
right-hand column.

P A R T 3

Draft Environmental Impact Statement

Text

Summary Sheet

Draft Environmental Impact Statement

Department of Transportation, Urban Mass Transportation Administration

1. Name of Action: Administrative Action

2. Description of Proposed Action:

A. The Massachusetts Bay Transportation Authority (MBTA) has filed an application to UMTA for Federal capital grant assistance for a 6.4 mile extension of the Red Line rapid transit from its present terminus at Harvard Square to Arlington Heights. The Harvard Square Station will be rebuilt in a new location and 5 new stations will be constructed at Porter Square in Cambridge, Davis Square in Somerville, Alewife in Cambridge, and Arlington Center and Arlington Heights in Arlington. A parking garage for 2,000 vehicles is planned for Alewife and 350 parking spaces will be provided at Arlington Center and 350 at Arlington Heights. Approximately 3 miles will be in a tunnel, approximately 3 miles will be mostly depressed, and the remaining 440 feet will be at grade. About one-half of this project will be constructed on existing railroad-owned right-of-way.

B. The application requests capital grant assistance under the Urban Mass Transportation Act of 1964, as amended. The total project cost is estimated at \$386,191,000. The requested Federal share of the grant is \$308,952,800.

C. UMTA project number MA-23-9008.

3. Summary of Effects

A. Long-term Beneficial Effects:

1. Accessibility to the central business district will increase, particularly for the transit dependent. The elderly and handicapped will have improved mobility.
2. This project would present an alternative to the automobile, which is compatible with the state-wide commitment to reduce auto-dependency. Transit usage will result in reduced travel time, reduced local traffic congestion, a more energy efficient system, and cleaner air.

The statement that there will be 350 parking spaces in Arlington Center and 350 parking spaces in Arlington Heights should be corrected. The additional statement that approximately three miles will be mostly depressed and the remaining 450 feet at-grade is also inconsistent with Town of Arlington policy.

Recommended Action: The statement should be corrected to be consistent with Town of Arlington policy.

Statement corrected. See cover letter and Summary Sheet.

NOTE: BRACKETED STATEMENTS ARE MBTA RESPONSES.

Text

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B. Long-term Adverse Effects:

1. Commuter and freight rail service will be eliminated on the Lexington Branch of the Boston and Maine railroad from Alewife outwards.
 2. Twenty-two (22) residential units and nineteen (19) businesses will be displaced.
 3. The project may cause increased growth pressures along the alignment and at stations. Cooperative land use planning efforts will control and direct these growth pressures.
- #### C. Short-term Effects:
1. Construction easements are needed for 3.5 acres of publicly-owned parkland. This will cause minor interferences to recreational activities. Preparation of the Section 4(f) document is in progress.
 2. Approximately 3 acres of wetland vegetation will be disturbed during construction. Appropriate Federal and State permits will be procured.
 3. Noise and localized air pollutant concentrations will increase during construction.
 4. Temporary disruption of traffic and pedestrian patterns will occur.
 5. There will be temporary construction impacts on two Historic Districts listed on the National Register and three sites of historical significance. Section 106 procedures are in progress.
 6. There will be a reduction in water quality due to sedimentation during the temporary relocation of Mill Brook and Alewife Brook, siltation downstream, run-off during construction in the Alewife Station area, and the temporary rerouting of the Little River. Mitigation techniques such as construction of retention/detention ponds, sediment basins and traps, grade stabilization structures, and the immediate seedling and mulching of slopes after construction to prevent erosion will be used.
 7. Construction will generate employment opportunities.

4. Alternatives Considered:

A. No-build Options:

1. Do-nothing
2. Priority rights-of-way for buses

B. Commuter Rail from North Station to Alewife

The reference to the displacement of 22 residential uses is no longer correct since 21 units are located in a building located adjacent to Russell Common in Arlington Center that will not be acquired as part of the project.

Recommended Action: Correct item B 2 to reflect new correct displacement.

[Change made. See Summary Sheet.]

IMPACT SUMMARY (cont'd)

Text
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For Details See:
Table # Page #

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IV-19
V-16
VI-25
VII-27
VIII-26

VI-36
IV-23, V-19
VI-34, VII-36
VIII-35

Appendix C

II-121

Potential development over r-o-w and vacant lands along alignment; more likely to experience increase in intensity of land uses rather than change. Residential and commercial activity likely to concentrate around station areas - no net increase anticipated, only redistribution. Control of type and quality/quantity of growth possible through public officials, local planning staff and joint development subcommittees established during design phase.

1 Single Family Structure, 1 Multi-Family Structure (Total of 22 Dwelling Units)

19 Businesses

\$116,700

II-33

Temporary construction effects on two Historic Districts, listed on the National Register; severity of impact presently being studied by UMTA officials and the Mass. State Historic Preservation Officer.

Approximately 8700 square feet of Russell Field in Cambridge would be disrupted during construction; would not affect the recreational facilities.

The indication of residential and business displacements contains proposed displacements in Arlington Center that will no longer take place.

Recommended Action: Correct the number of business and residential displacements.

[Table corrected. See Page S-3.]

Impact Category

LAND USE

COMMUNITY FACTORS

Residential Displacement

Business Displacement

Tax Loss (1975 Revenues)

PARKS, RECREATION AND HISTORIC RESOURCES

4 (f) and 106 involvement

S-3

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Text

Chapter II

GENERAL PROJECT DESCRIPTION AND REGIONAL CONSIDERATIONS

PROJECT DESCRIPTION

The project is an approximately 6.4 mile extension of the MBTA Red Line Rapid Transit from the present terminus at Harvard Square to Arlington Heights in the town of Arlington, Massachusetts. See Figures II-1a to II-1c.

The alignment coincides with Alternative 3 as identified in the EIP&R Red Book. The length of each line segment and station area as well as the proposed method of construction are summarized in Table II-1. From a cut-and-cover segment through Harvard Square, the route proceeds north in tunnel/deep bore, generally following Massachusetts Avenue to Davis Square in Somerville. The route then turns west on the Fitchburg Freight Cutoff to Alewife just south of Dewey and Almy Circle where Route 2 from the west terminates at the Alewife Brook Parkway. Freight service would be discontinued on the Freight Cutoff from Grove Street just east of Davis Square in a direction towards Alewife to a point just west of Massachusetts Avenue in Cambridge.

The route proceeds northwest from Alewife along the Lexington Branch of the Boston and Maine Railroad through Arlington and Lexington. Commuter rail and freight operations would be displaced.

The Harvard Square Station would be rebuilt in a new location and new stations would be constructed at five other locations studied in detail in this report. These are: Porter Square in Cambridge, Davis Square in Somerville, Alewife in Cambridge, Arlington Center and Arlington Heights in Arlington. Each of these station areas is discussed in separate chapters. Parking spaces for 2,000 vehicles would be provided at Alewife, 350 at Arlington Center and 350 at Arlington Heights. No new parking would be provided at Harvard, Porter or Davis Squares.

A more detailed description follows.

The reference to 350 parking spaces at Arlington Center and 350 spaces at Arlington Heights should either be deleted or corrected. At the present time, the project calls for no parking in Arlington Center and the parking garage proposed for Arlington Heights is not consistent with town policy.

Recommended Action: Correct the text to reflect the current situation.

[Correction made. See Page II-1.]

Draft Environmental Impact Statement

The reference to 1200 feet of lay-up track is inconsistent with other statements in the document referring to this part of the project

Recommended Action: Determine length and configuration of lay-up track and correct Draft Environmental Impact Statement.

The statement that the project will be mostly depressed is inconsistent with town of Arlington policy which is that the line must be completely underground.

Recommended Action: Determine if it is possible to place the line completely underground, and if so, correct Draft Environmental Impact Statement.

Corrections made to Table II-1.

PROJECT ALIGNMENT CHARACTERISTICS									
Segment	Length in Feet	Type of Structure	Horizontal		Vertical		Alignment Conditions		
			250 Foot Min. Radius	4,000 Foot Radius at Station	0.5% Minimum	1.6% Maximum	0.5% at Station	North of Harvard Square	Lay-up track
Harvard Square Station Complex	1,450	Tunnel/Cut-and-Cover						N/A	None
Harvard Square to Porter Square	4,100	Tunnel/Deep Here	500 Foot Min. Radius	400 Foot Min. Radius (Outbound)	0.0% Minimum	1.5% Maximum		None	None
Porter Square Station	440	Tunnel/Cut-and-Cover			0.0%			N/A	N/A
Porter Square to North Square	1,010	Tunnel/Deep-Here	700 Foot Min. Radius		0.0% Minimum	0.4% Maximum		None	None
North Square Station	440	Tunnel/Cut-and-Cover			0.0%			N/A	N/A
North Square to Davis Square	440	Tunnel/Cut-and-Cover			0.0%			N/A	N/A
Davis Square Station	440	Tunnel/Cut-and-Cover			0.0%			None	None
Davis Square to Alewife	4,500	Tunnel/Cut-and-Cover	1500 Foot Min. Radius		0.0% Minimum	2.0% Maximum		West of Davis Square & East of Alewife	N/A
Alewife Station	440	Tunnel/Cut-and-Cover			0.0%			N/A	N/A
Alewife to Arlington Center	8,010	Mostly in Precast Section with Light Decking	400 Foot Radius		0.0% Minimum	1.4% Maximum		North of Alewife	1200 Feet North of Alewife
Arlington Center Station	440	Tunnel/Cut-and-Cover			0.0%			N/A	N/A
Arlington Center to Arlington Heights	10,210	Mostly in Precast Section with Light Decking	800 Foot Min. Radius		0.0% Minimum	2.4% Maximum		West of Arlington Center	None
Arlington Heights Station	410	At grade			0.4%			N/A	N/A
TOTAL	11,500								

Draft Environmental Impact Statement

Text

Transitways would be depressed from west of Route 2 to a tunnel/cut-and-cover segment at Arlington Center Station. Beyond Arlington Center Station, the profile would rise and transitways would be depressed in Lexington Branch right-of-way to east of Arlington Heights Station where tracks would ascend to enter the station at grade. In certain areas the depressed sections would be covered with light decking to permit linear park development.

The six proposed stations, analyzed in this report and identified on Figure II-1 (B through E) are located as follows:

- Harvard Square - New station platforms would be constructed under Harvard Square extending underground to Flagstaff Park. Other portions of the existing station would be redeveloped and the north leg of the bus tunnels would be relocated.

- Porter Square - The new station would be located under the Boston and Maine Railroad just east of Massachusetts Avenue, crossing Somerville Avenue and extending into the Porter Square Shopping Center parking area. This is a refined version of the alternative identified in the BTPR Red Book as Station B. This would be a major intermodal connection to commuter rail service on the Fitchburg Main Line of the Boston and Maine.

- Davis Square - The station would be constructed in The Fitchburg Freight Cutoff right-of-way, crossing under College Avenue and Holland Street. This is an evolution of what the BTPR Study identified as Location B.

- Alewife - A station would be built beneath the Alewife Brook Parkway on an east-west axis immediately south of the Fitchburg Freight Cutoff. This is an adaptation of the BTPR Alternative B. A single 2,000-car parking garage would be constructed west of the Alewife Brook Parkway. Access to garage would be from the Alewife Brook Parkway to Rindge Avenue.

This statement that the transit way would be depressed from Route 2 to Arlington Center is inconsistent with other information in the EIS which indicates that the transit way will be decked from Route 2 to Arlington Center.

Recommended Action: Insure that the project as proposed in the Draft Environmental Impact Statement is consistent with Town of Arlington policy which is to have a completely covered transit line within the Town of Arlington.

[Statement corrected. See Page II- 3.]

Draft Environmental Impact Statement

Text

Arlington Center - The station is a modified version of the BTPR Alternative A. It would be constructed in the Lexington Branch right-of-way at the intersection of Massachusetts Avenue and Swan Place in the central business district.

Arlington Heights - The station would be built adjacent to the Boston and Maine's Lexington Branch right-of-way on land between Park Avenue and Drake Road owned by the MBTA.

The total ridership demand for the project (Harvard Square to Arlington Heights) has been estimated by CTPS to be 47,600 daily inbound trips, with no parking constraints. However, community policy positions, based on perceived space limitations, available capacity on station approach streets and esthetic considerations, have limited the parking supply to 2,700 spaces along the length of the extension. According to CTPS park-and-ride demand estimates, this supply constraint would result in an excess parking demand of 5,300 vehicles (or 6,400 persons) per day, assuming a turnover of five percent of the total demand. Approximately 1,500 persons from this excess vehicle demand would be diverted to other modes of access to Red Line Extension stations. Ridership demand and feasible route networks for feeder bus service, one of the station access modes, would require an estimated 244 peak-hour bus arrivals at these stations based on the CTPS minimum supply strategy. More detailed planning and programming for the feeder bus service would occur during later stages of the project. The remaining park-and-ride demand excess (4,900 persons) would choose either to make their trips by auto or seek on-street parking near the stations. As a consequence, the resulting total ridership demand with limited parking supply is estimated to be 42,700 inbound trips, approximately a ten percent reduction from the unconstrained forecast demand.

Despite the magnitude of the project, land acquisition requirements and displacement have been kept to an absolute minimum by routing transitways within existing transportation rights-of-way and by maximum tunnel/deep bore construction. A summary of land acquisition and permanent easements by town and land use type is shown in Table II-2.

The reference to 2,700 parking spaces along the transit extension includes 350 spaces in Arlington Center and 350 spaces in Arlington Heights.

Recommended Action: Correct this statement to reflect the position of the Town of Arlington which has already been agreed to by the State.

Statement corrected. See Page II- 5.

Text Draft Environmental Impact Statement

Table II-2 (Continued)

Address	Type	Use
Lake Street Parking Lot	Public	Partial Taking
Hamilton Road-Private Way	Residential	Partial Taking
Boston & Maine Railroad	Private Utility	Total Taking
8 Swan Place	Residential	Total Taking
590 Massachusetts Avenue	Commercial	Permanent Easement
602-606 Massachusetts Avenue	Commercial	Permanent Easement
Swan Place and Massachusetts Avenue	Commercial	Total Taking
Russell Common	Public	Total Taking
Russell Common	Public	Permanent Easement
Russell Common	Public	Total Taking
14 Medford Street	Commercial	Total Taking
2-10 Park Terrace	Residential	Total Taking
15-27 Mystic Street	Commercial	Total Taking
Uncle Sam Memorial Park	Public	Permanent Easement
4 Winslow Street	Residential	Permanent Easement
6 Russell Terrace	Residential	Permanent Easement
Coolidge Bank & Trust Co. Mystic St.	Commercial	Permanent Easement
Brattle Street @ B.M.R.R.	Residential	Partial Taking
Boston & Maine Railroad	Private Utility	Total Taking
5 Park Avenue	Commercial	Total Taking
1345 Massachusetts Avenue	Commercial	Partial Taking
Colonial Village Apartments	Residential	Partial Taking
Boston & Maine Railroad	Private Utility	Total Taking

The properties listed in the adjoining table are inconsistent with the takings listed in the draft Capital Improvement Grant application. Scannell Field is not included in this table. Russell Common, 14 Medford Street, 2-10 Park Terrace, and 15-27 Mystic Street are included in this table and should be deleted since they were originally required for a parking garage. The property designated as Brattle Street @ B.M.R.R. is listed as a residential property. This property should be changed to Industrial.

Recommended Action: Correct this table so that it is consistent with the project as presently outlined.

No need to take 8 Swan Place.
Hamilton Road - Okay.
No taking of Scannell Field.

All other corrections have been made.

Text Draft Environmental Impact Statement

of rapid transit service between Cambridge and outlying communities would increase the opportunities available to residents in the outer Northwest area, thereby increasing the effective market areas of the region's establishments.

Operator Benefits

If the Red Line is extended, the benefits experienced by the MBTA would be mainly operational in nature. Such benefits would permit more efficient use of transit resources and would include:

- Lower long-term operating costs.
- More efficient use of the bus fleet.
- Improved terminal facilities.

Lower Long-Term Costs

Although the Red Line Extension project would require an extensive capital investment, over the long run it would be less expensive than bus transit for the level of service that would be provided. The capital-intensive nature of a Red Line Extension would require a large initial investment which would be repaid over time. However, the expansion of bus service--which is highly labor-intensive--to provide a comparable level of service would involve not only a significant amount of initial capital outlay but also continually increasing and extensive labor related expenses. Over the life of the project, this service would prove more expensive than the rapid transit option, which would entail only a minimal labor expense.

Efficient Bus Use

Extension of the Red Line would reduce the number of buses required for long haul service between the Northwest Subregion, Cambridge, and downtown Boston. These buses would then be available to provide more efficient feeder service for improved access to the rapid transit line. In addition to complementing rapid transit service, the expanded feeder network would improve the overall quality of local transit service between points not served by the Red Line and would increase the bus accessibility of intraregional trip attractors.

II-35

The Town has been unable to obtain the supporting documentation that would substantiate this statement.

Recommended Action: Provide the additional analysis necessary to support this statement.

Back up data used in the calculations and projections of operating costs for the different alternatives are on file at the offices of the Central Transportation Planning Staff. This information is available for public review in that office.

The Draft Environmental Impact Statement provides little detailed analysis on the number of buses that would be required to service the area. The Town of Arlington has made it clear that any feeder bus strategy must be developed with the town.

Recommended Action: Provide information on the bus feeder network in anticipation of the construction of the project.

Information on the proposed Feeder Bus System has been added to Chapter II. See Page II-50 and Figures II-18 and II-19. Finalization of the feeder bus strategy will be done in coordination with the Town of Arlington.

Draft Environmental Impact Statement

Text

Parking

The anticipated demand/supply relationship would result in an excess parking demand of approximately 4,900 vehicles per day if the Red Line is extended to Route 128; 5,300 vehicles per day with an Arlington Heights terminal; and 4,200 vehicles per day with an Alewife terminal. The parking supply would be limited to a total of 5,000, 2,700 and 2,000 spaces with terminals at Route 128, Arlington Heights, and Alewife, respectively. These limits, for testing purposes, are based on City of Cambridge policy statements, the physical and economic characteristics of the station areas, and opinions of the different transportation advisory groups.

Although it is conceivable that the limited supply of parking would cause some of the excess demand to divert to other access modes, such as kiss-and-ride and bus, a portion of the park-and-ride demand can be expected to choose not to use the Red Line if sufficient parking is not provided. Table II-14 shows the estimated diversion of the excess park-and-ride demand to other access modes and the remaining excess demand.

Table II-14

REDISTRIBUTION OF EXCESS PARK-AND-RIDE DEMAND AT RED LINE STATIONS

(Daily Transit Passengers)

	Alternative Terminals	
	Route 128	Arlington Heights Alewife
Diverted to other access modes	1,170	1,540 1,090
Remaining excess demand	4,730	4,840 4,030

This potential excess park-and-ride demand would essentially have two options: 1) to choose not to use the Red Line, thus resulting in reduced ridership; or 2) to park-and-ride in spite of parking restrictions and attempt to seek on-street parking spaces. The split between the two options can be estimated only in very general terms. Both options, however, would have a negative effect on the transportation system in the Northwest Corridor. Persons

The reference to 2,700 parking spaces for an Arlington Heights terminal contains assumed parking for 350 cars at Arlington Center and Arlington Heights. This is inconsistent with Town of Arlington policy.

Recommended Action: Correct this statement to be consistent with Town policy.

Change made.

Text Draft Environmental Impact Statement

Feeder Bus Service

For the purpose of measuring the impact on Red Line Ridership of varying levels of feeder bus service, the demand estimation process for the Red Line Extension initially assumed an extensive bus network feeding stations on the rapid transit line. This network was designed to provide connections to the Red Line from all communities in the Northwest sub-region within Route 128, and from Bedford and Burlington as well. Bus service to Lincoln and Concord was not assumed, because those towns are served by the Boston and Maine Fitchburg Railroad. The mode split calculations performed with this network indicated that, despite frequent service, many of the routes assumed would have attracted very small ridership (under 100 riders per day), and, in fact, some would have attracted no riders. Parking capacity at Alewife would not have significant impact on bus ridership. For example, a 2000 car limit on Alewife parking compared to an unlimited number of spaces at Alewife would result in a total increase of only 70 bus riders at all stations combined from all bus routes combined. After the demand estimates were made, the bus system was reviewed, and routes having very low patronage were eliminated. The network thus established is the one for which environmental impacts were computed.

Table II-18 indicates peak-hour bus requirements at Red Line stations to satisfy estimated demand. Peak-hour bus arrivals at Red Line stations, and three alternative supply strategies are shown in Table II-19. Figures II-6, II-7 and II-8 illustrate the feeder bus networks for the three different alternative supply strategies. Operational characteristics, including route networks and levels of service would be subject to modification at the time of implementation as determined by the MBTA and the communities involved.

Two tables mentioned in this paragraph along with the three figures provide a very rudimentary outline of a bus feeder network. The position of the Town of Arlington is that it should have an opportunity to participate in the development of that network.

Recommended Action: Begin immediately to design a feeder bus network that adequately reflects the need of the transit riders in the region.

A new feeder bus network has been developed for the Red Line Extension. See Page II-50 and Figures II-18 and II-19.

Text Draft Environmental Impact Statement

Between 1960 and 1970, the percentage of multi-family units in the Northwest Subregion showed a slight increase of four percent, for a total of 56 percent. As seen in Table II-28, the core cities, showing little change from 1960, were above the subregion totals with about 90 percent multi-family dwelling units. The Town of Arlington, slightly above the average for the inner suburbs, increased its percentage of multi-family units from 43 percent in 1960 to 56 percent in 1970. The inner suburbs as a whole increased from 40 percent to 51 percent. With an increase from 5 percent in 1960 to 12 percent in 1970, the outer suburbs had the smallest number of multi-family housing units.

Owner-occupied units

Table II-28 shows that the total of 36,411 occupied units in Cambridge, 6,990, or 19.2 percent, were owner occupied, with a median value of \$24,200. In Somerville, 9,884, or 34.1 percent, of the 28,999 occupied units were owner occupied; the median value was \$16,700. Arlington had 57.3 percent--10,075 units--that were owner-occupied, with a median value of \$25,800.

The low percentage of owner-occupied units in Cambridge and Somerville can be attributed, in part, to the fact that homes have been converted into small rental units to accommodate student housing needs. In 1960, 22.5 percent of the housing units were owner occupied in Cambridge and 35.8 percent in Somerville.

Renter Occupied

In Cambridge, 29,421 of the occupied units were renter occupied. The average monthly contract rent was \$119. Somerville had 19,115 rental units with an average monthly rent of \$97. Of the 17,548 occupied units in Arlington, 41.1 percent--7,227--were renter occupied; the average rent was \$143.

Housing Density

In Cambridge, the average number of persons per household was 2.43; while in both Arlington and Somerville, the average was 3.0 percent. The concentration of students may explain the lower figure in Cambridge.

It is assumed that the average household size in Arlington and Somerville is three persons, not three percent.

Recommended Action: Correct.

Change made. See Page II-77.

Text Draft Environmental Impact Statement

Vibrations of buildings are seldom experienced in much of the area near the proposed Red Line Extension. In those few locations where a problem of vibration exists, the source of the vibrations can be traced to existing railroad operations (East Arlington and Davis Square), heavy truck, bus and trolley operations on rough streets (along Massachusetts Avenue) and internally generated vibrations from building mechanical equipment. Residents in East Arlington and Davis Square currently experience vibrations from passing trains for a number of reasons including proximity of homes to the track (within 100 feet), condition of track and trackbed, and weight of train (heavy freight locomotives and cars).

Future Noise and Vibration with Rapid Transit in Operation

The introduction of rapid transit operations in an area often results in a new source of noise and vibrations for many people. Vibrations could be a problem in residences within 100 feet of the track centerline, especially in the homes near Porter Square in Cambridge and Davis Square in Somerville under which the subway tunnel is expected to pass, and in the East and Central Arlington homes adjacent to the track. Without special vibration control features, rumbling noise may be heard at night in these homes. During the daytime hours this rumbling noise will probably be masked by noises from a variety of indoor activities, including radio, hi-fi and television playing, water running, dishwasher operating, etc.

Noise from transit operations will, in general, not add significantly to the existing noise in much of the region, with possible exceptions being near ventilation shafts and near at-grade and in-cut operations. Rather than transit operations, secondary effects of construction activities will probably have greater noise impact on the region, especially in residential areas away from commercial centers.

Noise and Vibration Control Measures

The transmission of vibrations to nearby buildings from the passage of a train in a subway tunnel involves the three elements common to most noise control problems: source, a transmission path, and a receiver. Solution of these problems requires abatement methods at one or a combination of elements.

Noise control at the receiver is not an effective solution in this situation, because it involves property takings at worst, or expensive modifications to the buildings at best: therefore, efforts

The issue of noise and vibration has been a major concern of Arlington residents. The EIS and public discussion of this subject have not satisfied the concerns of abutters.

Recommended Action: Provide more detailed readable analysis of the potential for noise and vibration, and institute a public education program on this subject immediately

Statement is correct; no change made.

During the Pre-grant Engineering phases detailed information on noise and vibration will be disseminated to residents and businessmen who are located adjacent to the right-of-way. Public information meetings will be held, at which time a noise consultant will be available to answer more specific questions.

Text Draft Environmental Impact Statement

The length of each line segment and station area as well as the proposed method of construction are summarized in Table S-1. From a cut-and-cover segment through Harvard Square, the route proceeds north in tunnel/deep bore, generally following Massachusetts Avenue to Davis Square in Somerville. The route then turns west in a tunnel/cut-and-cover on the Fitchburg Freight Cutoff to Alewife just south of the Dewey and Army Circle where Route 2 from the west terminates at the Alewife Brook Parkway. The route proceeds north and west from Alewife along the Lexington Branch of the Boston and Maine Railroad to Arlington Heights. Beyond Alewife, the line would be mostly depressed with intermittent light decking to Arlington Center and Arlington Heights.

The Harvard Square Station would be rebuilt in a new location and new stations would be constructed at five other locations studied in detail in this report. These are: Porter Square in Cambridge, Davis Square in Somerville, Alewife in Cambridge, Arlington Center and Arlington Heights in Arlington. A separate chapter is devoted to each of these station areas. Parking spaces for 2,000 vehicles would be provided at Alewife, with 350 at Arlington Center and 350 at Arlington Heights. No new parking would be provided at Harvard, Porter or Davis Squares.

The alignment and station locations are shown on Figures II-1A through E.

Prominent vs. Construction Impacts

No permanent taking of 4(f) lands is anticipated for the construction of the Red Line Extension. There will be some temporary takings during construction; these takings would be minor, usually a narrow strip of land and some trees and plantings. Other construction impacts would result from construction noise, dust and dirt, and security and safety problems. The effect of these impacts can be reduced through mitigating measures.

Each 4(f) area is discussed, describing the existing lands, facilities, use and patronage. The probable construction impacts are described and mitigating measures are suggested which would provide for maintenance of recreational functions and protect the structure and character of historic resources during the construction. A qualified archeologist will be available in accordance with Massachusetts law throughout the construction process to make site investigations. He would identify artifacts of potential archeological value so that actions

The reference to intermittent light decking to Arlington Center and Arlington Heights is inconsistent with town policy. Other sections of the draft EIS indicate that light decking will be placed on the line between Alewife and Arlington High School with the exception of Arlington Center where there will be a cut-and-cover configuration.

Recommended Action: Correct EIS for consistency and recognize the position of the Town of Arlington that the line, if constructed, must be covered for its entire length in the Town of Arlington.

Change made to correct project description.
See Page II-128.

The Town of Arlington has not accepted the proposal for 350 parking spaces in Arlington Center nor has it accepted the proposed Arlington Heights station and parking garage.

Recommended Action: Recognize the position of the Town of Arlington and correct the draft EIS accordingly.

[Change made. See Page II-128.]

Text Draft Environmental Impact Statement

include improved access and circulation to the Alewife Brook Reservation, through linkage to the proposed linear park system. The eastern end of the Reservation would also be enhanced by landscaping after tunnel completion. Preliminary concepts call for areas of mowed grass, borders of shrubs and trees, lighted pathways and picnic tables and benches. However, it is recommended that bicycle and pedestrian access to or from the sensitive wetlands further west be limited to avoid irreparable impacts from overuse. Development of an educational nature trail and retention of prime natural areas would help preserve the naturalness of the area while affording limited recreational access.

The ventilation shaft, to be located 100 feet north of Alewife Brook, would be treated for noise reduction with baffles, screens or other means.

Pond Lane Park and Toilet

The principal activities at this 1.5 acre facility are children's unsupervised play and family picnicking. The landscaped park has five picnic tables, four outdoor grills, numerous benches, and a variety of playhouse equipment such as merry-go-round, slides, and swings. In 1970, construction of a boat ramp, boat dock, parking for cars and trailers, rearrangement of Pond Lane, traffic control devices at the railroad underpass and new picnic tables and landscaping is to be funded by the Public Access Board.

While the Pond Lane Park receives intensive neighborhood patronage from the East Arlington residents, it is also important to the entire Town of Arlington because of its frontage on Spv Pond. Here families can enjoy the pleasing visual aspects of Spv Pond while enjoying or relaxing. Activities of the Summer Playground Program for East Arlington are centered on this park and usage is, therefore, heaviest during the summer.

Present access to the Pond Lane Park and Toilet is poor. Although a small paved parking area is available to the west of Pond Lane, the vehicular approach is dangerous and most access is by foot. Primary access is provided by a path which extends from Pond Lane under the Lexington Branch right-of-way. Pedestrian access is also possible from both Spv Pond Field and Seawall Field.

No other park in the East Arlington area has comparable facilities to the Pond Lane Park and Toilet. As one of the Spv Pond Shore Parks, it provides limited access to the Spv Pond, which increases its importance.

The construction of the boat ramp, dock, and parking for cars and trailers has not yet begun. It is expected that it will be undertaken during 1977.

Recommended Action: Correct the accompanying statement to reflect this condition.

Date changed to 1977.

Draft Environmental Impact Statement

Text

The park is owned by the Town of Arlington and is under the jurisdiction of the Board of Selectmen. In connection with the BTPR Study, Letters of significance, dated February 2, 1973, were received from the Secretary of the Board of Selectmen relative to Whittemore Historic Park and the Uncle Sam Memorial Park.

During cut-and-cover construction of the station at Arlington Center, this 0.2 acre park would be relocated. This would involve removal of trees and relocation to the north along the railroad right-of-way during the construction and replaced after construction of the station area; or permanently relocated to the east along Mystic Street as indicated on Figure VII-2; it could also be relocated north along the right-of-way but far enough from the construction area so it would not be affected by the continuation for Arlington Heights. The reconstruction relocation whether temporary or permanent would be planned through close coordination between the Town of Arlington and the MBTA.

Uncle Sam Memorial Park

The Uncle Sam Memorial Park is a 0.2 acre historic site located across the street from Whittemore Park on the northwest corner of the Mystic Street-Massachusetts Avenue intersection in Arlington Center.

The grass-covered site is the approximate birthplace of Samuel Wilson, the progenitor of Uncle Sam. A large statue will be erected in the park and dedicated in 1976. In addition to its historic significance, the park is used by shoppers and senior citizens as a quiet rest area.

This park and the statue would be relocated during cut-and-cover construction of the Arlington Center station. Like Whittemore Historic Park, it could be temporarily or permanently relocated during construction so that use would be continuous. Its reconstruction would also be planned through close coordination between the Town of Arlington and the MBTA.

Summer Street Playground

The Summer Street Playground, a 5.5 acre recreational park, is bounded by Forest, Sumner and Ryder streets and the Lexington Branch right-of-way. It is the largest facility in a block of recreation-ally-oriented open space along the railroad right-of-way and Summer Street, midway between Arlington Center and Arlington Heights.

The statue commemorating the birthplace of Samuel Wilson was erected in 1976. After ten years of intensive effort by the Arlington Chapter of the Jaycees, it may be extremely difficult to relocate this statue without doing irreparable damage to it.

Recommended Action: Further work on the draft EIS should examine the statue and the construction techniques to determine feasibility of relocating it without damaging it.

Statement corrected.

It may not be necessary to temporarily relocate this statue during construction. This decision cannot be made until preliminary engineering and design of the Arlington Center Station is underway.

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Page two

January 16, 1976
Mr. D'Eramo

2) The retention and reuse of the 1928 Subway kiosk, located at the junction of Massachusetts Avenue, Brattle and Dunster Streets in the center of the street, should be studied in depth. Any new construction located here is also subject to review for compatibility with the contiguous National Register historic district. I would like to request an opportunity for my review of this area of concern at the earliest study and design stage.

3) An engineering study should be made and all means taken to insure protection of the foundation and walls of the First Parish Unitarian Church (on the National Register).

4) In cooperation with the Cambridge Historical Commission and the Cambridge Conservation Commission, plans should be made for the type and location of any new trees to replace those which must be removed during construction in Flagstaff Park. Also, the location and design of the vent should be planned to meet the approval of the aforementioned commissions and myself.

5) The design of any street furniture and type and location of any trees removed during construction in the entire Harvard Square/Cambridge Common Historic Districts is subject to review by this office.

I recognize that there will be a short term adverse effect on the National Register districts during construction which cannot be mitigated but I also feel there is no prudent and feasible alternative to this effect. With proper review, the possible long term adverse effects can be removed or mitigated.

Arlington

1) The design of the proposed above ground subway station, located at the junction of Massachusetts Avenue, Pleasant and Mystic Streets, is subject to review for compatibility with the contiguous Arlington Town Center National Register Historic District. The Arlington Historical Commission and this office should be consulted at the earliest design stage.

2) The relocation of the commemorative plaque, now at the above junction, will not require my review, providing the Arlington Historical Commission is satisfied with the new location.

The above comments represent the consensus of agreement reached at the January 14 meeting. I recognize and commend the study which has gone into

This letter from the Massachusetts Historical Commission incorrectly refers to an above-ground subway station in Arlington Center.

Recommended Action: The Historical Commission should be made aware of the fact that the subway station in Arlington Center is below ground.

The Massachusetts Historical Commission is aware of the fact that the subway station in Arlington Center is below grade.

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Since most of the tunnel/cut-and-cover construction would be confined to the existing Lexington Branch railroad right-of-way, severe disruption to the adjacent wetland vegetation would be avoided. However, construction of the tunnel requires crossing two streams: Alewife Brook which, at the point of crossing, is a small tributary flowing northward from the West End Iron Works; and the Little River, which comprises the major flow at the point of crossing. To maintain flow during construction, the Little River would have to be diverted from the existing stream channel around the tunnel excavation and then returned to the original streambed after tunnel completion. The smaller flow from Alewife Brook would either be pumped across the excavation or temporarily channeled around the construction area. These techniques would require space outside of the existing railroad right-of-way and would damage the existing wetland communities. Depending on the difficulties encountered during construction, the temporary use of one to three acres of land beyond the right-of-way may be required. Such use would eliminate, for all practical purposes, the existing vegetation and wildlife habitat. The proximity of Route 2 and the encroachments of the A. D. Little parking lot and the railroad embankments have disrupted the existing wet meadow and only marginal habitat is provided. Songbirds and small mammals which utilize the food resources and vegetative cover would be displaced by the project.

The construction techniques utilized in crossing Alewife Brook and the Little River would alter the existing aquatic habitat. Since these portions of the streams are already polluted, the potential severity of this impact would be reduced. Only pollution tolerant organisms are found here at present. Removal of polluted sediments and reconstitution of the streambed after tunnel completion may improve a portion of the aquatic habitat. Although only a small area of streambed would be dredged, the quality of the bottom sediments to be removed would be analyzed before excavation to determine acceptable methods for handling and disposal of sediments to prevent entry of contaminants into ground or surface waters. Since stream flow would be diverted prior to removal of sediments, no contaminants would be dispersed downstream. The details of construction, sequencing, sediment disposal, and erosion control procedures would be determined during final design of the project. Necessary Federal and State water quality and wetlands permits, such as the Corps of Engineers permit for activities in navigable waters, would be obtained during final design to ensure project conformance with applicable environmental standards.

VI-88

Response:

The probable impacts of Red Line Extension construction activities are discussed on Pages II-145 to II-150 of Chapter II and Page VI-106 of the Construction Impacts section of Chapter VI. It is reasonable to state that compared to another alternative alignment from Alewife to Arlington Heights, the alignment following the Boston and Maine Lexington Branch right-of-way will have the least impact on the wetlands of the Reservation. Historically, this right-of-way has been disturbed three times before--during construction of the railroad, and construction of a 54-inch and 48-inch MDC sewer--and after each disturbance wildlife and vegetation has returned to normal as evidenced by our surveys of the area. Therefore, short-term impacts which do not create any irreversible harm are not severe impacts.

This question as well as other questions concerning the potential impacts of Red Line construction on the wetlands will be studied in detail in the upcoming MDC Mystic River Watershed Study.

The largest wetland in the Town of Arlington is immediately adjacent to the railroad right-of-way just north of Route 2. The draft EIS contains no precise study of the relationship between the construction of the Red Line and the sensitive hydrology in the Alewife area. Therefore, it is unreasonable to state that the adjacent wetland vegetation would not be severely disrupted.

Recommended Action: A careful and detailed hydrology study of the Alewife area should be undertaken immediately to insure that this project does not do irreparable damage to that sensitive area.

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Another short-term negative impact of the project would be siltation below the construction zone. Sediments would potentially enter Alewife Brook from excavation dewatering, other construction processes, and erosion of exposed soils in the construction area. Suspended silt would periodically be carried downstream as far as the Mystic River, causing high turbidity and potentially lower dissolved oxygen concentrations, some sediments would be deposited along the river, particularly where the current is stilled and pools are found. Biologically, the siltation would suffocate many benthic organisms, thus impacting community structures, and inhibit photosynthesis in affected areas. Most fish would avoid those reaches of the stream affected by high turbidity and sport fishing would be generally unproductive. Serious sedimentation would not be continuous throughout the one- to three-year construction period, but would occur during heavy rains or snow melts. After project completion, water quality would return to preconstruction conditions and an aquatic community similar to the one presently found would be reestablished.

No adverse impacts on floodwater storage capacity or groundwater are anticipated. The tunnel would be located in a stratum of clayey sand that is only slightly permeable. Consequently, it would have little effect on groundwater movements. Flood storage capacity of the Alewife area may be nominally increased by the removal of the existing railroad embankments and the possible removal of an artificial berm west of the embankment.

Secondary Impacts

An important aspect of Red Line Extension planning at Alewife has been the coordination of the project with the concerns of municipal and regional agencies and community organizations. Recreational land use issues, focusing on the MDC Alewife Reservation wetlands, have been addressed by the Alewife Task Force Land Use and Linear Park Subcommittees with participation of the MAPC and the MDC Planning Department. Current proposals which may be implemented in conjunction with the Red Line construction at Alewife specify that the east end of the Alewife wetlands area--bounded by Route 2, the transit station and the A. D. Little parking lot--would undergo extensive

The EIS process did not include any borings. Therefore, it is difficult to understand how a statement that no adverse impacts of floodwater storage capacity or groundwater will be anticipated. There is no indication that the tunnel in East Arlington will not act as an underground dam, or the tunnel displacing groundwater and increasing the flooding in that area.

Recommended Action: Proceed immediately with the hydrology study of the area to insure that the transit construction is undertaken in a manner that will not do damage to this area.

Tunnel design for the East Arlington section will consider water table levels, groundwater flow and aquifer recharge areas. As information is developed during the Mystic River Watershed Hydrology Study and detailed soils test boring data becomes available, more will be known on this subject. In any case, tunnel design will reflect hydrological conditions and measures, such as setting the tunnel in a deep gravel bed or below the water table to allow free movement of groundwater, will be used to negate any potential effects on the floodwater storage and groundwater conditions.

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Table VII-1 presents the parcels of land that would have to be acquired to maintain the continuity of the right-of-way.

Table VII-1
RIGHT-OF-WAY REQUIREMENTS
ALEWIFE TO ARLINGTON CENTER

Address	Public	Partial Taking
Lake Street Parking Lot	Residential	Permanent Easement
10-42 Hamilton Road	Residential	Total Taking
8 Swan Place	Public	Permanent Easement
Russell Common	Commercial	Total Taking
590 Massachusetts Avenue	Commercial	Permanent Easement
Swan Place and Massachusetts Avenue	Commercial	Total Taking
Boston and Maine Railroad	Utility	Permanent Easement
2-10 Park Terrace	Residential	Total Taking
14 Medford Street	Commercial	Total Taking
15-27 Mystic Street	Commercial	Total Taking
Whittemore Park	Public	Permanent Easement
4 Winslow Street	Residential	Permanent Easement
Coolidge Bank Parking Lot	Commercial	Permanent Easement
6 Russell Terrace	Residential	Permanent Easement

Construction Considerations

The major portion of transit construction along this segment of the Red Line Extension would be in a decked depressed section. Tunnel/cut-and-cover construction would be utilized in both the Arlington Center and Alewife Station areas and in areas where streets pass over the alignment.

VII-8

The table designated VII-1 contains four errors: Russell Common, 2-10 Park Terrace, 14 Medford Street, and 15-27 Mystic Street should not be included as properties to be acquired, since the Russell Common parking garage is no longer included in the proposal.

Recommended Action: Correct the table.

Table corrected.

Text Draft Environmental Impact Statement

Cut-and-cover construction between Alewife Station and Route 2 would require temporary relocation of Alewife Brook prior to excavation. Once the box section for the tunnel-cut-and-cover has been completed and covered over, Alewife Brook would be relocated to its original channel. Cut-and-cover construction would terminate at the northern edge of Route 2 with a transition through a portal into a decked depressed section. Approximately 1,600 feet of 46' wide decked over depressed section beyond Route 2 in East Arlington would serve as a turnback and storage facility for Alewife Station. Beyond this point, the section would be approximately 34 feet wide.

The decked depressed section would either consist of two retaining walls with prestressed concrete deck beams placed at the top to support the light decking or it could be a boat section with a continuous bottom slab added. Although the depth and characteristics of the groundwater table will determine the final type of open cut construction, the likelihood of a high water table, based on previous boring data, suggests the construction of the boat-type depressed section. Further investigation during final design would probably result in decreasing the length of the boat section, thus further reducing the cost of the line segment.

Small lengths of tunnel/cut-and-cover construction would be utilized where Lake Street, Linwood Street and Pond Lane cross the depressed section to provide proper support for road-way traffic.

All buildings within the zone of influence would require protective measures to minimize damage caused by settlement or vibration. These requirements would be determined for each case with conventional underpinning being used where a less expensive technique would not provide adequate protection. Other methods to reduce settlement over a wide area include cut-off walls and grouting of soils. All utility lines would be carefully protected or relocated outside the decked depressed section during construction. Strict controls to minimize noise and dust from construction activities would be required to minimize adverse impacts to area residents. Construction areas would be fenced off from access by children. If necessary, security guards could be provided to monitor sites during off-hours.

VII-9

The reference to 1,600 feet of decked and depressed section beyond Route 2 in East Arlington should be corrected. There are other references in the EIS that are inconsistent with this statement.

Recommended Action: Correct inconsistencies in the EIS.

Change made to text. The total length of the turn-back and lay-up facility will be 1,600 feet, of which 1,200 feet will extend beyond Route 2 into East Arlington.

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Major consideration would be given to the maintenance of pedestrian and vehicular traffic during construction. At all street crossings, the excavated areas would be temporarily decked to allow for the uninterrupted movement of vehicles while construction continues below. During the reconstruction of roadways, street traffic would have to be diverted until the work is completed. In the areas of Lake and Linwood Streets, the adjacent ground is level and temporary roadways could be constructed to reroute traffic around the construction site. These temporary detours would be eliminated only after the construction is completed and normal traffic patterns are restored.

Construction on Russell Common should be done in a manner which respects the close proximity of St. Agnes Church, the Arlington Catholic High School, and the two housing complexes for the elderly, Winslow Tower and Chestnut Manor. Stringent controls on noise and dust emissions will be necessary. Noise controls and possible cessation of construction will be necessary during night hours due to the proximity of housing for the elderly. Construction should be limited to non-school months and/or winter months when the windows of the non-airconditioned school buildings are closed.

During construction of the decked depressed section, large amounts of excavated materials may create disposal problems. To avoid impacting nearby residential streets with truck traffic, these materials would be transported within the linear construction zone, whenever possible.

It is estimated that construction of the line segment from Alewife to Arlington Center would take 24 months; construction of the Arlington Center Station is expected to take about 36 months. See Table VII-2.

Table VII-2

CONSTRUCTION SEQUENCE DEPRESSED DECK

Construction Phase	Time in Months			
	0	12	24	36
1. Alewife to Arlington Center				42
2. Arlington Center Station				

VII-10

This reference to the construction of a parking garage on Russell Common should be deleted. The project no longer contains any construction on Russell Common, and there is state legislation that has been passed that would prohibit such construction.

Recommended Action: Delete.

Text deleted.

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Costs

Estimated construction costs for the project are presented in Table VII-3. These estimates are for the line segment from the end of Alewife Station to the beginning of Arlington Center Station and for the station complex.

Table VII-3

ESTIMATED CONSTRUCTION COSTS
ALEWIFE TO ARLINGTON CENTER

Transit Structure	\$21,571,700
Floating Slab	3,339,500
Trackwork	3,605,000
Electrification	1,923,000
Signaling	1,370,000
Ventilation	820,000
Utility Relocation	450,000
Decking and Repaving	70,000
Remove Railroad Track	98,000
Subtotal	\$33,246,200
Other Project Costs	8,311,800
Total	\$41,558,000

ARLINGTON CENTER STATION COMPLEX

Station	\$ 7,360,000
Parking Garage	1,840,000
Subtotal	\$ 9,200,000
Other Project Costs	2,300,000
Total	\$11,500,000
Section Total	\$53,060,000

The parking garage listed in this table should be referenced with a footnote indicating that it is included for planning purposes only since the parking garage on Russell Common has been removed at the request of the community.

Recommended Action: Correct and add footnote.

Parking Garage has been eliminated from cost estimates.

VII-11

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Table VII-9

ESTIMATED 1980 DAILY INBOUND BOARDINGS *
ARLINGTON CENTER STATION
(All Alternatives)

Mode of Access			
Walk-In	Bus	Kiss-and-Ride	Park-and-Ride Total
1,840	1,400	1,750	440 5,430

* Source: CTPS with provision for parking assumed.

If the Red Line is extended beyond Alewife, the station at Arlington Center would provide Arlington residents with direct access to Red Line rapid transit service to downtown Boston. The station would be the focal point of Arlington Center. The proposed station design includes a parking garage at Russell Common with 350 transit parking spaces and off-street areas for bus loading/unloading and kiss-and-ride activities. Garage access would be provided from Mystic Street, Chestnut Street, and Medford Street. Table VII-10 shows the estimated 1980 peak-hour auto arrivals at the Arlington Center Station by access route.

Table VII-10

ESTIMATED 1980 PEAK-HOUR AUTO ARRIVALS *
ARLINGTON CENTER STATION
(All Alternatives)

Access Route (D)(a)	Mode of Access		
	Park-and-Ride	Kiss-and-Ride	Total
Mystic Street (N)	195	265	460
Pleasant Street (S)	25	25	50
Massachusetts Avenue (E)	30	40	70
Massachusetts Avenue (W)	40	70	110

(a) (D) - Denotes direction from which arrival originates
i.e., (N) = from the north).

* Source: CTPS with provision for parking assumed.

VII-22

This statement is misleading since there is no longer a parking garage planned for Russell Common. The reference to access from Mystic, Chestnut, and Medford Streets should also be deleted.

Recommended Action: Correct.

Statement corrected.

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experience approximately 400 additional peak-hour vehicles. During the morning and evening peak hours, existing traffic conditions at the Massachusetts Avenue-Mystic Street/Pleasant Street intersection are characterized by unstable flow and substantial delay (level of service E). Major congestion occurs due to the large peak-hour traffic volumes on Mystic Street, north of the intersection, and on Pleasant Street, south of the intersection. If no intersection improvements are made, peak-hour traffic flow would be severely restricted resulting in traffic jams and substantial delays.

Direct Red Line service between Arlington Center, Harvard Square and downtown Boston could result in curtailment of the existing express bus service along Massachusetts Avenue. The faster, parallel service provided by the Red Line is expected to be more attractive than bus service for this trip movement; however, feeder bus arrivals at the station would contribute to the on-street congestion during peak hours. Without off-street facilities for all bus loading, unloading activities, traffic conflicts are likely to occur near bus stops in the station area, especially along Massachusetts Avenue.

The Arlington Center area would be subject to traffic impacts caused by transit users bound for both the Arlington Center and Alewife stations. Based on estimates supplied by the Arlington Department of Planning and Community Development, through traffic bound for the Alewife Station could range from 100 peak-hour vehicles, with either Arlington Station as a terminus, to 480 peak-hour vehicles if Alewife is the terminus of the Red Line Extension. With an Arlington Heights terminus, transit traffic destined for Arlington Center was estimated to be approximately 570 peak-hour vehicles; if Arlington Center is the terminus, that figure could increase to 650 peak-hour vehicles. Table VII-14 summarizes these estimates for alternative terminals at Alewife, Arlington Heights and Arlington Center.

This information is contained on Page II-39 and on page VII-24 of the Arlington Center Chapter. Finalization of the feeder bus strategy will be done in coordination with the Town of Arlington.

No precise determination has been made as to the feeder bus and work related to the Red Line. Therefore, it is impossible to say that feeder bus arrivals will contribute to the existing level of congestion at the station.

Recommended Action: Develop a system for the feeder bus network and determine the number of bus arrivals expected at the station and relate to the number of bus arrivals in the area at peak hour today.

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In Arlington Center, the Red Line Station is expected to be a catalyst to development, to encourage a concentration of commercial and office uses in three of the four quadrants. Large land holdings by private owners in the two eastern quadrants, and by the Town of Arlington in the northwest quadrant will facilitate such development, the full extent of which will be controlled by the zoning envelope. Site plan reviews by the Arlington Redevelopment Board will be an important means to control induced development. Plan reviews should give strong emphasis to esthetic considerations and open space needs.

The garage planned for Arlington Center Station will remove a residential use from the northeast quadrant, and permit direct access from local commercial parking on the second level of the garage to future plaza shops and the commercial uses on Massachusetts Avenue. It would open up the possibility of future joint development of commercial and office space, and additional parking south of the MBTA structure. Final design of the MBTA garage should not preclude, or should be closely coordinated with, such future development.

Plans, Policies and Zoning

In Arlington Center, the proposed station and the parking structure as originally proposed were largely in accord with local planning. The Town's expressed desire for a subterranean pedestrian connection between the three commercial quadrants of Arlington Center has been included in the station plan. The garage originally proposed for Russell Common was in accord with the Arlington Center - Mill Brook Valley Plan in that it included local commercial parking with easy access to Massachusetts Avenue commercial uses located to the south. Any parking included in the station complex after redesign will be developed collaboratively with Arlington representatives and will be subject to local approvals and permits.

Proposed Arlington Center Station development does not include extensive joint development as a part of initial construction activities. In accord with local plans and policies, joint development of the area will be considered during the design phase. Implementation of joint development concepts may necessitate modification of the zoning Bylaw. It is estimated that the Town will exercise care in modifying and strengthening the zoning Bylaw to achieve its goal of revitalizing Arlington Center, without entailing an undesirable transformation of the character of the community.

VII-35

This misleading statement indicates that a parking garage is still planned in Arlington Center. This is not the case.

Recommended Action: Remove and correct this statement.

[Statement deleted.]

The Mill Brook Valley Plan did recognize the need for transit parking in Arlington Center. However, it also recognized the impacts of such parking, and a critical provision of the plan was that any transit parking be provided in at least two, and preferably three, separate locations. The proposal to locate all commercial and transit parking on Russell Common was not consistent with the Mill Brook Valley Plan and, also, was not agreed to by the Town of Arlington or the Redevelopment Board in their statements made at the public hearing.

Recommended Action: Correct this misinterpretation of town policy.

[Statement deleted.]

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The project, with alignment and profile as shown on Figures II-1B and C would create a significant positive impact in terms of implementing Town policies and plans for the area between Alewife and Arlington Center. Designed as a section to be covered by light decking, the project would comply with the Board of Selectmen's stated policy favoring an underground alignment and elimination of the Boston and Maine freight lines. This decking could support the linear park proposed in the Arlington Center - Mill Brook Valley Plan.

Raised ventilation gratings, placed behind two-foot walls, would be interspersed along the right-of-way. As the right-of-way in East Arlington is in excess of 65 feet, it would be possible to have a continuous linear connection around these openings. At the Hamilton Apartments east of Spy Pond the right-of-way is only about 40 feet wide. Since no ventilation opening is recommended at this location, the linear park connection could be effectively maintained within the limits of the right-of-way. Pathways, additional landscaping, and the installation of park furniture would be the responsibility of the Town.

A depressed section without decking or an at-grade alternative would both be in conflict with the Arlington Board of Selectmen's policy concerning the necessity for an underground alignment. These alternatives are also in conflict with the Town's linear park concept which would utilize the entire right-of-way, as outlined in the Arlington Center - Mill Brook Valley Plan. The cut-and-cover alternative, with maintenance of freight service above, would also be in conflict with local plans and policies which favor termination of freight service. The no-build alternative or construction of a Red Line extension which does not go beyond Alewife, would have a significant negative impact on Town plans and policies which favor the Red Line Extension as a means of revitalizing Arlington commercially and of creating a linear park through the Town.

Property Takings

Two property takings which would result in displacement are proposed. The wood frame structure on Park Terrace which is comprised of 21 dwelling units and 3 businesses, and the commercial storefront at 14 Medford Street, the present location of the Alex Awning and Shade Company would be taken. One additional two-family

The removal of the parking garage from Russell Common obviates the need to acquire the wood frame structure on Park Terrace which contains 21 dwelling units and three businesses. It also no longer requires that the property at 14 Medford Street be taken.

Recommended Action: Correct this paragraph.

Statement corrected.

Text Draft Environmental Impact Statement

dwelling would also be taken in Arlington Center. This taking would be necessary since the foundation of the home would be in direct contact with the station structure and would therefore be impacted by perceivable vibration.

Station construction would also require taking of a small triangular parcel at the corner of Massachusetts Avenue and Swan Place, the alley adjacent to 14 Medford Street, and a narrow parcel, now a parking area, between the railroad right-of-way and Winslow Tower. Land in the Uncle Sam Memorial Park would be necessary for a station entrance. To compensate for land used by the entrance, the park could be extended northward above the cut-and-cover transit.

Along the line segment from Alewife to Arlington Center, takings would be necessary between Lake and Linwood Streets. A gravel lot on Lake Street, owned by the Town, would have to be acquired, as would a strip adjacent to the Hamilton Apartments which includes the apartments' trash dumpster and part of a landscaped embankment. Without the mitigating measure provided by a decked transit line, disturbance of the embankment would have a significant negative esthetic impact on the apartments. Both the dumpster area and the landscaped embankment should be reconstructed once construction work is completed in the area. It will be necessary to partially relocate the dumpster area, as the decking over the transit line would not be sufficiently strong to support a trash pickup vehicle. The property owned by the Town was formerly the site of a railroad station which has been since demolished.

The proposed project, and all alternative profiles would require identical property takings. With an at-grade alternative the reconstructed landscaped embankment would not be as extensive as it is at present; the apartment complex would experience a permanent negative esthetic impact. Maintenance of freight service directly above the cut-and-cover transit tunnel would not require takings beyond those already discussed. The no-build alternative would require no property takings.

Commercial Activities

Relocation of the four displaced businesses should not constitute a major problem. Vacant storefronts are current available nearby. The affected businesses could conceivably be provided the option, following a brief period of temporary relocation, of relocating within a joint development project for the northeast quadrant of Arlington Center.

VII-37

The removal of the Russell Common parking garage means that no businesses will have to be displaced and relocated by project action.

Recommended Action: Correct this paragraph.

Statement corrected.

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increase. Rents and real estate values in the vicinity of Arlington Center Station are also expected to increase as a result of the increased regional accessibility of Arlington Center.

Without the Red Line Extension, the Gladstone Associates Study estimated the housing development potential of Arlington at 1,000 dwelling units. With the Red Line Extension, the housing development potential through 1990 was estimated to be 1,500 dwelling units. Many of these units, privately financed, will be beyond the rental range of moderate income households. Some units, financed with government assistance, could meet the needs of moderate income families for whom housing is now in critical short supply.

Residents of the 21 housing units displaced by the construction of Arlington Center Station could face problems finding suitable housing, within their rental or purchase price range, due to the present shortage of units. Vacancy rates in the western submarket of the Boston area, which includes Arlington, were found to be extremely low, below one percent for all units, in the Analysis of the Boston, Massachusetts Housing Market prepared in 1971 by the Federal Housing Administration. This condition continues and has been exacerbated in Arlington during the recent building moratorium.

Property Values and Taxes

Aside from the expected general increase in property values due to an improved transportation system, certain localized effects would occur in the immediate vicinity of the transit right-of-way and nearby stations.

When the freight line is removed and a linear park strip is developed, property values of homes in the East Arlington Area should increase more than would be expected without Red Line development. Even if the Town does not undertake to extensively improve the grassed over decking above the transit line, the mere elimination of the freight line, with its noise and vibration, as well as its under-maintained roadbed, would make the abutting homes a more desirable purchase.

The project, as presently delineated and understood by the town, no longer requires the displacement of the residents of 21 housing units.

Recommended Action: Delete or otherwise correct.

[Statement deleted.]

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Business zoned parcels in close proximity to Arlington Center Station would experience greatly increased property values. Some residential parcels in the immediate area, particularly on Swan Place, Mystic and Chestnut Streets could have increased property values, resulting from their being within walking distance to transit, offset by a decrease value resulting from higher traffic volumes on adjacent streets. Closing of Swan Place at Massachusetts Avenue would mitigate against such an offset in that area, by reducing traffic.

Alternatives such as a depressed transit line without decking or an at-grade transit line could possibly lower property values in the immediate vicinity of the tracks unless major steps are taken to minimize noise, vibration, safety and visual impacts. Measures which would tend to offset these negative impacts would be the construction of safety and noise barriers, special roadbeds and extensive landscaping. The alternative of freight tracks over tunnel/cut-and-cover transit would leave conditions relatively unchanged. Improved property values could accrue if a portion of the right-of-way not used for freight operations were landscaped.

An estimated \$54,790 (1975 dollars) in tax revenues would be lost because of the right-of-way requirements for this section of the project.

Employment Opportunities

There would be no impact in East Arlington as no affected industries are located along the right-of-way. In Arlington Center displaced business would not need to relocate out of town, so no diminution of retail employment should be expected over the short term.

The proposed project should have a positive impact on employment in Arlington Center by encouraging a concentration of commercial and office development in the vicinity of the transit station. The Gladstone Market Study conducted for the Mill Brook Valley Plan indicated that an additional 175,000 square feet of retail and 230,000 square feet of office space would be developable if the Red Line were operational. This additional square footage would create a substantial number of new retail, office and service jobs in Arlington Center. The transit facility itself will provide new jobs to the community: positions such as station attendants, maintenance staff, train engineers and transit police.

The projected loss in tax revenues and the reference to displaced businesses is no longer consistent with the proposed project action.

Redommeded Action: Correct to reflect current conditions without the proposed parking garage.

Tax revenue figure corrected.

Statement corrected.

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Text

More extensive planting of the embankment adjacent to the Hamilton Apartments is also recommended to buffer the apartments from the view of those using the biker-hiker path in the linear park.

Extensive fencing and landscaping could be used to mitigate negative esthetic impacts of the at-grade transit alternative; however, these measures would in turn create a visual barrier. Pedestrian overpasses could be introduced to provide access to recreation areas, but would not suffice to meet the demands of existing pedestrian activity crossing the right-of-way.

Most Arlington Center Station impacts can be mitigated by measures cited on page VII-42. These measures essentially mitigate against esthetic impacts which might occur without a sensitive design response to the site environment. Impacts resulting from dwelling unit and business displacement will require innovative solutions. Possible temporary relocations until new units or commercial storefronts are available would be more suitable for some displacements.

PARKS, RECREATION AND HISTORIC RESOURCES

This section presents the detailed information requisite to Section 4(f) review requirements to describe the existing conditions of these public parklands, including size, facilities, usage and ownership, and to thoroughly identify project impacts and methods of mitigation.

The following public parks, recreation areas, and historic structures are located along the transit alignment from Alewife to Arlington Center:

Thorndike Playground
Scannel Field
Pond Lane Park and Totlot
Spy Pond Field
Whittemore Historic Park
Uncle Sam Memorial Park

VII-54

The removal of the Russell Common parking garage from the project means that there will be no businesses displaced as part of the project.

Recommended action: Correct the text.

[Text corrected.]

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Text

Impacts

Several parks in Arlington Center will be affected by the proposed project and its alternates. At the Uncle Sam Memorial Park a small area adjacent to the Massachusetts Avenue sidewalk would be required, since the sidewalk is too narrow for placement of the entrance. It is recommended that this entrance be located as close to the Coolidge Bank building wall as possible. Replacement open space would be provided to the Town via an easement above the transit right-of-way abutting the north edge of the park. The area of the easement will more than compensate for the loss due to the construction of the station entrance.

Whittemore Historic Park would have to be relocated, at least during the period of cut-and-cover station construction. Depending on the final design of the station, adjacent parking garage and plaza complex, the park could be reconstructed at its present location or relocated to the north on new open space.

The proposed depressed and decked transit line would have an overall positive impact on publicly owned park land by enabling development of a linear park to link all the major open space areas of the Town. Development of the transit right-of-way as a park would provide a net increase of open space to the Town, useful as a pedestrian spine serving the entire community.

The cut-and-cover alternate would provide similar benefits, however an open cut or at-grade alternate would not provide the benefits of access across the right-of-way to existing parks. It may be possible to construct a narrow hiker/biker path parallel to a depressed/open cut alternate, but this alternate would be far less desirable than the decked-over project.

This paragraph refers to a parking garage presumably on Russell Common. This has been deleted from the project.

Recommended Action: Remove the reference to the parking garage.

[Text corrected.]

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Text

Chapter VIII

ARLINGTON CENTER TO ARLINGTON HEIGHTS

PROJECT DESCRIPTION

From the Arlington Center Station west to Arlington Heights--approximately 2.4 miles--the Red Line Extension would be within the right-of-way of the Boston and Maine Lexington Branch. A station would be located at Arlington Heights west of Park Avenue. The parking, kiss-and-ride and bus facilities at Arlington Heights as well as the track grade and decking configuration as described in this Chapter are preliminary and subject to further analysis and development to assure consistency with the results of the ongoing Minuteman Area Transit Improvement Study.

The project assumes MBTA acquisition of railroad right-of-way and subsequent abandonment of railroad operations on the Lexington Branch.

Line Segment

The horizontal and vertical alignment for this segment was developed following detailed analysis of the alternatives. The proposed alignment reflects the concerns of Arlington citizens and public officials. Principal criteria included the limiting of recreational and residential land takings by remaining within the Lexington Branch right-of-way to the maximum extent possible, and the placing of the Arlington Heights Station at-grade to minimize costs, while developing a station plan which would mitigate at-grade station impacts.

Major vertical constraints would be the Mill Brook culvert west of Water Street and street and utility crossings along the right-of-way. See Figures II-1D and II-1E.

The existing Lexington Branch is at-grade through Arlington Center, with crossings at Massachusetts Avenue, Mystic Street, Water Street and Mill Street. Massachusetts Avenue and Mystic Street are major traffic arteries; adjacent property is heavily developed in commercial uses. The railroad bisects the White-more Historic Park and, at Mystic Street, passes adjacent to Winslow Tower, a multi-story housing complex for the elderly.

VIII-1

The Town of Arlington stated at the public hearing that the proposals for the Arlington Heights station were not consistent with town policy. These statements indicated that since 1972, the town had been awaiting the results of a proposed study of transportation needs west of Arlington Heights. Since this study was not finished, the town could accept none of the proposals for Arlington Heights, since it was unclear what kind of a function the Arlington Heights station would have to perform in the transportation network of the Northwest Corridor.

Recommended Action: Immediately begin an analysis of the Arlington Heights/East Lexington area to determine, in conjunction with the input from the Minuteman Area Transit Improvement Study, how transportation proposals west of Arlington Heights/East Lexington can be effectively related to an Arlington Heights/East Lexington station.

The key recommendations and findings of the Phase I Summary of the Minuteman Area Transit Improvement Study have been included in Chapter VIII. Once a pre-grant engineer/architect is selected for preliminary station design, this concern can be explored in more detail. The project description for the Red Line Extension has been modified to include a below-grade station at Arlington Heights.

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A municipal parking lot, Fowles Pond Field, and New England Farms (a large food processing plant) lie on either side of the rail line between Water and Mill Streets. There are five railroad sidings in this area, four serving New England Farms and one community siding serving several small businesses.

Beyond Mill Street, the railroad is on embankment along Arlington High School. The Lexington Branch continues on embankment, varying in height from a few feet to 25 feet west of Forest Street. Between Forest and Lowell Streets near Mount Gilboa, the terrain rises and sections of the Lexington Branch through Arlington Heights are depressed as much as ten feet below ground level. There are no at-grade crossings beyond Mill Street. The railroad passes over Grove Street, Brattle Street and Forest Street in the embankment area and under Lowell Street and Park Avenue along the steep depressed area. At Lowell Street and Park Avenue, the steep approaches to the grade separation structures create "humpbacked" crossings with poor vertical sight distances. These bridges are old wooden structures with 27-foot spans and five-ton load limits.

Major utility crossings in this segment include a 42-inch MDC interceptor sewer between Water and Mill Streets, a 36-inch MDC sewer near Arlington Heights, a 30-inch storm drain near Ryder Street, a 36-inch storm sewer near Summer Street, and a 24-inch MDC water main near the MDC pumping station. In addition to these utilities, there is a 16-inch high-pressure gas transmission line east of Grove Street.

Mill Brook crosses the Boston and Maine Lexington Branch twice: east of Mill Street and at Arlington Heights.

Within this segment of the Red Line Extension project, all existing railroad trackage, structures and embankment would be removed. New grade separation structures would be built for all streets crossing the depressed section of the project. Since track level in the depressed section would be 18 to 25 feet below ground, the inadequate grades and clearances at the Brattle Street and Forest Street crossings would be eliminated and sight distances at the Lowell Street and Park Avenue bridges would be improved. In critical areas--where the right-of-way is narrow and abuts residential structures, and along the Arlington High School football field--the depressed transitways would be decked. This decking, together with the width of right-of-way available elsewhere on the alignment, would permit the development of linear parks along much of this segment.

VIII-2

The position of the Town of Arlington is that the transit line must be covered completely through the Town of Arlington. There are many areas west of Arlington High School where the transit way abuts residential property and also public recreational facilities. The Town of Arlington cannot accept a transit system that is not completely covered.

Recommended Action: Begin immediately to determine ways in which the transit line can be covered west of Arlington High School.

Text corrected. The project alignment west of Arlington High School is in a tunnel/cut-and-cover.

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Table VIII-1 indicates the parcels of land that would have to be acquired for construction of the project.

Table VIII-1

RIGHT-OF-WAY REQUIREMENTS
ARLINGTON CENTER TO ARLINGTON HEIGHTS

<u>Address</u>	<u>Type</u>	<u>Use</u>
1345 Massachusetts Avenue	Commercial	Partial Taking
Brattle Street and Boston and Maine Railroad	Commercial	Partial Taking
53A Park Avenue	Commercial	Total Taking
Colonial Village Parking Lot	Residential	Partial Taking
Boston and Maine Railroad right-of-way	Utility	Total Taking

Construction Considerations

A major portion of this segment of the Red Line would be depressed with retaining walls. The types of depressed sections selected in final design will be contingent on hydraulic and soils conditions and cost feasibility. An extensive boring program would be required to establish construction parameters. Preliminary investigations indicate that retaining wall construction with structural deck beam members on top of the walls would be viable; however, if a high groundwater table is found, a boat section with a continuous bottom slab may be warranted.

At some points along the right-of-way where residential land uses abut, light decking would be installed to mitigate potential noise emissions and safety hazards. Pedestrian crossings would be provided at locations which are presently used by a large number of persons for access across the right-of-way.

Certain buildings, such as Winslow Tower and Brigham's Processing Plant, would require some protective measures to prevent ground movements and surface settlements. The needs of each particular case would be studied and conventional underpinning would be used where no other acceptable alternative would be practical. In many cases, grouting or cutoff walls may be more effective than underpinning.

VIII-7

This table is inconsistent with the table on page 11-9. There is an inconsistency between No. 5 Park Avenue and No. 53-A Park Avenue. Brattle Street is listed as commercial property in this table and residential property in table 11-2. In fact, the property is industrially zoned and used as a storage site by a contractor.

Recommended Action: Correct the table for consistency.

Table corrected.

See comment page VIII-2

See response to comments on page VIII-1.

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Mitigating Measures

Geometric improvements to the Massachusetts Avenue-Park Avenue intersection--including implementation of separate left turn lanes and signals at the intersection and elimination of angle parking on the Park Avenue approaches--would minimize delays, decrease traffic congestion, and optimize traffic flow through the intersection. A proposed improvement plan is shown in Figure XI-8. These improvements would permit parking supply at the station to be increased without adversely affecting traffic at the intersection.

The provision of additional parking would maximize the transit extension ridership benefits and minimize the adverse effects of on-street parking. If 500 parking spaces are provided, the excess parking demand with a Route 128 terminal would be 300 vehicles per day and 550 vehicles per day with an Arlington Heights terminal. If only 350 spaces are provided, the excess demand would be 380 and 750 vehicles per day, respectively. Accommodating additional park-and-ride passengers would minimize the traffic movements associated with the search for on-street parking. Alternatively, strict local enforcement of parking regulations would serve to restrict the use of on-street parking spaces by transit riders.

It is estimated that minor intersection improvements, which would not require taking of property, could increase traffic capacity sufficiently to permit 175 additional parking spaces at the station and still maintain a stable traffic flow (level of service C) during peak hours. If some peak-hour congestion and delay (level of service D) would be acceptable, a total of 350 additional parking spaces could be provided. A 500 to 700-space garage at Arlington Heights would minimize the excess park-and-ride demand and the associated adverse effects.

The above analysis of the effects of increased garage capacity was conducted to ascertain the carrying capacity of the station area street network. It should be understood, however, that the proposed 350 space garage was considered to be an absolute maximum by the Arlington Heights Transportation Advisory Group in light of the excess mass of a larger facility, increased traffic congestion and air pollution, and lack of any data from the Lexington study. The Group also indicated that Level of Service D would be unacceptable at the Park Avenue Massachusetts Avenue intersection.

The congestion created by kiss-and-ride vehicles could be offset by providing a longer kiss-and-ride loading/unloading area. The discharge and pickup of kiss-and-ride passengers during peak hours could be facilitated off-street, thus minimizing traffic congestion in the station area.

The formal statement submitted by the Arlington Heights Transportation Advisory Group after the public hearing made it clear that the group was not accepting nor promoting 350 parking spaces at Arlington Heights. The number 350 was used by the advisory group for planning purposes only and should not be used in any way as a recommendation by that group. The town and the local advisory group have consistently made it clear that no decision can be made in Arlington Heights until such time as there is input from the Minuteman Area Transit study.

Recommended Action: Begin immediately to relate the preliminary findings of the Minuteman Area Transit study to the requirements for a station in the Arlington Heights/East Lexington area.

Text corrected.

The preliminary findings of the Minuteman Area Transit Study will be related to the design of the Arlington Heights facility during the Pre-grant Engineering phases.

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Text

is 1.0. In a B4 zone, apartment houses fronting on streets wider than 50 feet, and on lots larger than 20,000 square feet or more are permitted an FAR of 1.2.

Residential districts in the area are predominantly R2 zones, permitting two family homes. These districts include parcels along Paul Revere Road, Nourse Street and Lowell Street Place. The present site of the Colonial Village apartments is an R5 zone permitting two- to three-story garden apartments. The site of Drake Village, the housing complex for the elderly, is an R6 zone permitting apartments up to eight stories high. An R1 district encompasses the town-owned lands at Hurd Field and Arlington Reservoir and the residential area to the north along Lowell Street and Westminster Road.

Industrial land uses are permitted north of Mill Brook and south of the Boston and Maine right-of-way east of the MBTA yard and west of Lowell Street. A small area just north of the railroad right-of-way and west of Park Avenue is also in an industrial zone.

Impacts

Land Use

Land use changes directly resulting from the development of this segment of the Red Line Extension are: 1) use of the existing poorly maintained railroad right-of-way as a depressed heavy rail transitway; and 2) use of the present MBTA bus yard as a transit station, parking garage and new open space. New open space would be created by decking over the depressed transit line at a limited number of locations including land adjacent to Arlington High School, land abutting the historic residential property west of Forest Street, and possibly the land adjacent to the Old Colony apartments.

Indirect effects of the transit extension to Arlington Heights would consist of increased pressures for development created by the desirability of locating residences--particularly apartments--and businesses in close proximity to a transit station. The full extent and nature of such changes would be controlled by town plans and zoning. Another indirect effect would be the possible closing of some industrial uses and redevelopment of such sites for residential use or, in one case, for the relocation of historic structures.

VIII-32

The proposals included here for decking are unacceptable to the Town of Arlington. There are many areas along this right-of-way that contain residential and recreational uses in close proximity to the proposed transit way. The Town cannot accept any proposal that does not cover the transit way west of Arlington High School.

Recommended Action: Begin immediately to determine ways the transit way can be covered.

Project description changed to include a tunnel/cut-and-cover alignment through the entire Town of Arlington. See Figure II-la, b, c, d for updated project plan and profile.

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Urban Design

The proposed project, creating a depressed transit line through the western half of Arlington via the right-of-way of the Lexington Branch railroad, would be compatible with surrounding development with the addition of lightweight decking at certain critical areas. When the right-of-way is narrow and is abutted by residential structures in close proximity to the centerline of tracks, decking has been included as part of the project. A short segment of decking has been introduced west of Forest Street where the right-of-way is narrow and runs between two residential areas and adjacent to a locally important historic structure. The Arlington Redevelopment Board at a meeting on August 11, 1975, felt that this decking would not be required if the historic structure could be moved to another site. Decking adjacent to the Brattle Court apartments is considered as an option. The Redevelopment Board also agreed that decking should be provided between Mill Street and Warren A. Pearce playground. This is also considered as an option. Between the bleachers of the Arlington High School Football Field and Summer Street, decking would be necessary to prevent objects from being dropped onto the tracks and to make the Summer Street curve safer.

The sections of the right-of-way shown as open cut would be constructed with a linear park or pedestrian connection on the side of the line nearest to residential and recreational land uses, in order to provide a transition of land use; i.e.: residential, recreational, transit, industrial. This sequence of uses would create a positive impact on residential areas many of which now directly abut an undermaintained Boston and Maine railroad right-of-way paralleling a strip of industrial development on the opposite side of the tracks.

The proposed stations would be in scale with existing Massachusetts Avenue street frontage. New open space at the east end of the station site would provide a window opening onto Mill Brook. Setbacks on the north and west sides of the parking garage would reduce the visual intrusion of the station complex. The pedestrian entrance to the garage would be highly visible from Massachusetts Avenue and would serve as a pedestrian access across the right-of-way as well as to the station.

VIII-37

The proposed transit line will replace an underutilized railroad spur with rapid rail transit cars moving at intervals of approximately six minutes. An open cut configuration west of Arlington High School is inconsistent with the existing development. The construction of the transit line will dictate, in large measure, the ultimate use of land adjacent to the tracks for many years to come. Since many of these areas are presently public park and recreation areas and relatively quiet residential streets, the town cannot accept a solution that is uncovered.

Recommended action: Begin immediately to design a system that provides for a completely decked transit way.

Project is now in tunnel/cut-and-cover through the entire Town of Arlington.

Text corrected.

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spacing and the high geometric standards adopted when the line was first constructed in 1912. With cars nearly 70 feet long, the Red Line represents the highest level of transit technology available in the Boston region.

The Red Line's downtown stations serve the majority of CBD trips directly, with good running times. Specifically, over 60 percent of Red Line riders walk directly from the stations to their destinations, while only a small percent of the number transfer to other lines primarily to reach the 20 percent of the trip ends located in the Back Bay. Therefore, because the Red Line operates in high running speeds directly to the area with the highest volume of destinations (Washington Station), it has good overall distribution characteristics.

Operating Costs

The Red Line Extension has the lowest cost per passenger characteristics of any option tested. The absolute marginal costs of operating very high frequency service from Harvard Square to Porter Square and Alewife are somewhat lower than the costs of operating less frequent service on the Green Line from Lechmere to Porter Square and Alewife due to the smaller increase in distance, and subsequent lower operating mileage. In short, extending the Red Line beyond Harvard Square would provide the most cost-effective service to the North Cambridge and Somerville areas and beyond.

In addition to line haul costs, a Red Line Extension from Harvard Square has the greatest potential for significantly reducing bus operating costs. The proposed extension would permit most of the bus routes along Massachusetts Avenue to be rerouted into the new stations and would reduce the frequency of service. Based on demand simulations for each of the other alternatives, considerable Inner Northwest demand would still be oriented through Harvard Square for Cambridge destinations and certain trip destinations in Boston. All such traffic could feed directly into the proposed new Red Line stations, thereby permitting subsequent restructuring of feeder bus routes.

This report does not contain any clear back-up material for the cost per passenger discussed in this paragraph. This makes it virtually impossible to compare the cost per passenger of the Red Line Extension to the cost per passenger of a bus system.

Recommended Action: Include material sufficient to explain these statements.

The data to support these statements can be found in Table IX-1.

Text

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For purposes of project definition, Route 128 was considered the ultimate terminal point for the Red Line Extension. This is in response to policy positions established by the Cities of Cambridge and Somerville and the Town of Arlington. The MBTA is currently sponsoring a transit improvement study in the Lexington area to assess the potential for extending the Red Line beyond Arlington Heights. This Environmental Impact Analysis Report assumes that the Red Line terminal would be at Arlington Heights. Of those alternatives considered in detail in this Study, Arlington Heights is the preferred terminal based on potential ridership. A terminal at Route 128 would not appreciably increase negative impacts within the area covered by this report. However, due to the limitation of funds, it is assumed that the project would be constructed in phases, beginning with the Harvard Square-Alewife section, continuing with the section to Arlington Heights and then proceeding to Route 128 if projected patronage levels warrant such an extension.

Alewife Terminal

Locating a permanent Red Line Extension terminal at Alewife would not satisfy the demand distribution pattern for the North-west Corridor. Forecasts for 1980 (earliest opening day) indicate approximately 9,000 boardings at the two Arlington stations. This concentration of demand is among the highest of any station planned outside of the regional core. The combined volume at these two stations is higher, for example, than the existing combined volume at the Kendall Square and Charles Street stations, and only slightly lower than the combined volume at the Kendall Square and Central Square stations.

The demand for parking at Alewife would exceed the capacity of a 2,000-car garage to accommodate all patrons who would like to park at the Alewife Station. Data for 1980 indicate that this garage would become filled during the morning peak hour--when the heaviest traffic volumes occur. Lack of parking supply usually results in higher levels of kiss-and-ride patronage as well as in the loss of some transit ridership. A similar situation is presently occurring at Quincy Center station.

IX-31

It is incorrect to say that Arlington Heights is the preferred terminal based on potential ridership, since only one site was selected and tested and there is no supporting documentation to prove that the site in Arlington Heights is, in fact, the best.

Recommended Action: Proceed immediately with an analysis of the Arlington Heights/East Lexington Area in accordance with the recommendations of the Town of Arlington submitted at the public hearing in March of 1976 to determine the most appropriate location for the terminal. This study should be related directly to the preliminary findings and alternatives of the Minuteman Area Transit Study.

See response to page VIII-1 comment.

The Town of Arlington, the City of Cambridge, the City of Somerville, and numerous citizen groups have made it clear that a terminal at Alewife is totally unacceptable.

Recommended Action: Insure that this statement makes it clear that a terminal at Alewife is unacceptable.

Alewife is discussed as an alternative terminal only.

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The Alewife terminal option would result in the most serious congestion problem of any of the options discussed in this chapter. The addition of 700 parking spaces in Arlington under those alternatives which extend the Red Line to Arlington Heights, would relieve the congestion at the Alewife station. This is not to say that the problem of limited parking relative to demand at Alewife would be totally alleviated by an extension through Arlington, or even all the way to Route 128. The data indicate that even with an extension to Arlington, the Alewife garage would be filled around 9:00 a.m. after the end of the peak-hour. However, all options which propose an extension of transit service beyond Alewife with the exception of feeder buses on city streets would be superior to the Alewife terminal option in terms of access-oriented congestion, and accommodating potential demand.

The actual extent of congestion attributable to transit access would depend more on the configuration of the new roadway system at Alewife, however, than on the degree of transit extension beyond Alewife. The Massachusetts Department of Public Works has proposed a transit access roadway configuration which would maximize direct access to the garage/station facility from every major direction and which would minimize conflicts with other traffic flows. This roadway configuration has been planned to minimize to the greatest extent possible the congestion that would be generated by a major transit facility. A number of other roadway schemes are currently under study by the Massachusetts Department of Public Works with emphasis on providing adequate access to the transit station.

Nevertheless, concern about congestion associated with a permanent terminal at Alewife has been a major issue for the local governments involved, and is a major reason for community support of the extension of improved transit service beyond Alewife. As recently as June 1975, the Cambridge City Council passed a resolution (primarily concerning the Porter Square station location) which stated that the Council's support was contingent upon the finding that the Red Line will be carried to Route 128, and that construction of the segment running northwest from Alewife Brook will begin no later than the construction between Davis Square and Alewife Brook."

LA-32

The reference to 700 parking spaces in Arlington presumably includes 350 spaces in Arlington Center and 350 spaces in Arlington Heights. No final decision has been made about the amount and location of parking to be built in conjunction with the Arlington stations.

Recommended Action: Delete the reference to 350 spaces in Arlington Center and 350 spaces in Arlington Heights.

Reference to 350 spaces in Arlington Center deleted.

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The state and local governments involved have agreed on the rejection of Alewife Brook as the permanent Red Line terminal as reported in the 1974 and 1975 Transit Development Programs. This decision was based on the desire to serve the additional ridership that would be generated by extension beyond Alewife; to increase the total number of park-and-ride spaces being provided, and to conform to the development goals of the Town of Arlington. Nevertheless, when considering constraints imposed by the availability of capital funds for project construction, the possibility of Alewife as an interim terminal does exist. The designation of Alewife as a terminal for a certain period of time, based on financial considerations, would be acceptable in terms of transportation service. User demands on Alewife would be great but not unmanageable. Such a fiscally-based decision would make it essential that the state and the affected communities develop and implement regulatory policies to allocate a scarce commodity--parking spaces at Alewife--such that transportation objectives would be achieved in the most consistent manner possible. Such regulatory policies, which would require examination over the next several years, include a "first-come-first-serve" policy as well as:

Increases in parking charges at Alewife significantly higher than the 50 cents per day currently charged at the parking garage at Quincy Center Red Line station.

Reservation of certain sections of the garage for off-peak use.

Regulation of admittance to the garage i.e., during the morning peak hour first admitting those automobiles containing two or more persons.

Development of expanded feeder bus service.

Combinations of the above, and development of other viable options.

IX-33

The position statements of the Town of Arlington and the City of Cambridge indicate clearly that an interim terminal that could become a permanent terminal at Alewife is not acceptable. The City of Cambridge position makes it clear that construction must begin in Arlington at the same time it begins in the City of Cambridge.

Recommended Action: Insure that the project funding plan proceeds in a manner that will provide adequate funds to construct to Alewife and through the Town of Arlington as soon as possible.

The Arlington segment will be built as one project unit, thus assuring that the project will not be discontinued part way.

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All of these options would have to be considered to some extent if the Red Line is initially extended to Alewife. Therefore, further study of these options is needed regardless of the final decision on an interim terminal.

Arlington Heights Terminal

A Red Line terminal at Arlington Heights would attract 5,500 more riders per day than a terminal at Alewife. This would include 700 park-and-ride patrons at the two Arlington stations. About half of these would be patrons who would use Alewife if parking were available there and the rest would be patrons attracted to the new stations but not to Alewife. The remaining ridership would consist of 2,200 kiss-and-ride patrons and 2,500 walk-in and bus patrons, none of whom would use an Alewife station. There would be no decrease in the number of park-and-ride patrons at Alewife because potential demand there would still exceed the parking supply. About 50 percent of the patrons from Arlington who would take buses to Alewife if the rapid transit line ended there would walk either to Arlington Heights or Arlington Center if rapid transit is extended to Arlington Heights. However, an equal number of persons who would consider Alewife too far away by bus, would use bus service to Arlington Center or Arlington Heights; therefore, total bus ridership would not change. The Arlington stations would not attract walk-in patrons from outside of Arlington, but about 1,800 daily bus riders from various communities would transfer at Arlington Center or Arlington Heights instead of at Alewife.

Route 128 Terminal

The BTPR Study examined the option of extending Red Line rapid transit service to Route 128 in Lexington as part of the proposed project. Two factors have influenced the decision to define the proposed project in this study as extending only to Arlington Heights. First, ridership projections indicate that while the market area beyond Arlington is significant, it may not justify the expense of third rail rapid transit. Second, the Town of Lexington formally took the position that the issue of the optimal transit investment in the outer Northwest Corridor should be investigated in a study completely devoted to the needs of that area.

LX-34

This sentence refers to the earlier proposals for parking garages in the Town of Arlington. The garage in Arlington Center has been deleted and the town has not accepted the proposal for the garage at Arlington Heights.

Recommended Action: Delete this reference to parking.

[Statement corrected.]

The Town of Arlington does not accept the proposal for a terminus in Arlington Heights. The formal position of the town is that a careful analysis must be undertaken for site possibilities in the Arlington Heights/East Lexington Area.

Recommended Action: Begin a study of alternative station locations in this area immediately.

[See response to page VIII-1 comment.]

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The MBTA and the EOTC agreed with the necessity to take that area out of the corridor analysis and examine it in a separate study. The Minuteman Area Transit Improvement Study is currently underway. The study is reviewing all data relative to the justification of a further Red Line extension in that area in addition to conducting a full analysis of the available alternatives. For these reasons, therefore, the proposed project description was established in terms of transit improvement to Arlington Heights.

Operating Costs

Annual operating and maintenance costs for rapid transit service to Arlington Heights would be approximately \$2.5 million more than for rapid transit service to Alewife. Assuming an adult fare of 50 cents at Arlington Center, Arlington Heights and Alewife, approximately \$1.6 million in additional revenue would be collected per year; this would amount to 64 percent of the incremental cost, twice the revenue-to-cost ratio for existing MBTA service. Additional revenues would be generated if a zonal fare system were adopted. Changes in costs for bus operations have not been included here since decreases in operating miles to existing service areas are usually offset by increases in operating miles to new service areas. The increase in user benefits for extension of rapid transit service from Alewife to Arlington Heights would not be as dramatic as the initial increase from Harvard Square to Alewife, but it would be approximately equal to the increase in operating and maintenance costs.

Summary

Extension of Red Line service beyond Alewife is desirable in terms of maximizing absolute levels of user benefits, conformance with local land development goals and objectives, maximizing ridership, and decreasing reliance on Alewife for the automobile (park-and-ride or kiss-and-ride) access to the Red Line. Although extension of the project beyond Alewife would not afford cost/benefit characteristics as positive as the initial Harvard Square to Alewife section, it does represent a desirable element of the total project as defined by the northwest planning process and is supported by a broadly-based local consensus.

LX-35

The positions of the Commonwealth of Massachusetts, City of Cambridge, and the Town of Arlington are that Alewife cannot be the terminus of the Red Line.

Recommended Action: The remaining issues in the Town of Arlington should be clarified immediately to insure that the Red Line can be constructed beyond Arlington.

The Red Line Extension Project is ultimately planned to extend to Route 128. The feasibility of this proposal will not be known until the completion of the Minuteman Area Transit Study.

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Table IX-4

ESTIMATED CONSTRUCTION COSTS IMPROVED COMMUTER RAIL ALEWIFE TO ARLINGTON HEIGHTS (GRADE SEPARATED AT MASSACHUSETTS AVENUE)

Line Costs	
Trackwork	\$ 2,190,000
Signaling	525,000
Street Reconstruction	50,000
Switches	200,000
Crossings	75,000
New Bridges	1,910,000
Fencing	611,000
Remove Existing RR Track	244,000
Subtotal	\$ 5,805,000
Other Projects Costs	1,450,000
TOTAL	\$ 7,255,000

Station Improvements Costs

Alewife Transfer Sta.	\$ 200,000
Arlington Center Sta. (Grade Separated)	\$18,950,000 to 24,450,000
Garage @ Arlington Center	1,840,000
Arlington Heights Sta.	350,000
Garage @ Arlington Heights	1,840,000
Subtotal	23,180,000 to 28,680,000
Other Projects Costs	5,795,000 to 7,170,000
TOTAL	28,975,000 to 35,850,000

Summary

Line Costs	\$ 7,255,000
Station Improvement	\$28,975,000 to 35,850,000
TOTAL	\$36,230,000 to \$43,105,000

The garage in Arlington Center has been deleted.

Recommended Action: A footnote should be added to this table indicating that the money for a garage has been included for budgetary purposes only.

The proposed Arlington Center Parking Garage has been excluded from updated project cost estimates. It does, however, remain in this table because these figures are for a commuter rail alternative with a parking garage.

IX-41

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zoning provisions which create further incentives for such development. Anticipated development in advance of or without the Red Line Extension would probably total only 75,000 square feet of retail space, 50,000 square feet of office space and 1,000 housing units. There would also be some rehabilitation and consolidation of retail space. The current housing trend towards multi-family units is expected to continue. The Gladstone study indicated that substantially more than the 1,500 new units expected with transit development could be developed in 10 to 15 years if enough land were available; however, there is little vacant land in Arlington.

The Arlington Center-Mill Brook Valley Plan emphasizes, with or without the Red Line, the need to concentrate retail development in several nodes along Massachusetts Avenue to provide increased opportunity for comparison shopping. The primary node would be Arlington Center with subnodes at Lake Street, Arlington Heights. Subnodes are characterized as community shopping areas. The plan envisions Arlington Heights development to be locally oriented retail and office space for professionals and small businesses. A more detailed discussion of future development can be found in Chapters X and XI.

Future industrial development is expected to be minimal. Major firms which currently rely on freight service, and which could not receive shipment by other means of transportation would probably close down. A new nine acre auto oriented commercial center is planned at Theodore Schwamb Mill. Businesses at the existing Mill site would be relocated.

The plan suggests transportation and traffic improvements to include reinstitution of local bus service to Belmont and Winchester through Arlington Center and scattering of new public parking facilities in Arlington Center between the northwest, northeast and southeast quadrants to minimize impacts on streets. No major alterations in the street network are proposed. A minor change which is proposed is the construction of a new street connecting Winslow Street and Mill Street in the post-Red Line phase. Intersection improvements, construction of median islands and one-way movements are suggested.

A major set of issues emerged after the public hearing on the capital grant application was held at the Town Hall on March 23, 1976. These were raised by representatives of St. Agnes' Parish which has a complex of facilities immediately abutting the proposed location of a parking garage for the Arlington Center Station. The Parish facilities include the Church and Rectory, Arlington Catholic High School, St.

The Arlington Center/Mill Brook Valley Plan carefully assessed the needs of Arlington Center. A principal recommendation was that parking for transit and retail purposes should be located in three of the four quadrants in Arlington Center. None of the MBTA problems in the draft Environmental Impact Statement recognized the importance of that recommendation.

In the fall of 1975, several schemes for locating parking facilities in the northeast and southeast quadrants were developed in coordination with the Town of Arlington's Department of Community Development. The southwest and northwest quadrants were not considered because of the limited space available for parking facilities in these areas.

Text Draft Environmental Impact Statement

Table F-3

ARLINGTON ZONING ADOPTED OCTOBER 1975

MAXIMUM F. A. R.

DISTRICTS

Residential 1 - Single family	0.35
2 - Two family	0.35
3 - Three family	0.75
4 - Town house	0.70
5 - Apartment--Low density	0.80
6 - Apartment--Medium density	1.50
7 - Apartment--High density	2.00
Business 1 - Neighborhood offices	0.75
2 - Neighborhood business	1.00
3 - Village business	1.40
4 - Vehicular-Oriented business	1.50
5 - Central business	2.40
Industrial	1.50
Planned Unit Development	4.00
Hospital	1.00
Transportation	0.35 or for extension by air rights into T-District, the controls of the district from which extension was made apply.

Residential 6, Residential 7, Business 4, and Business 5 are incorrectly listed. The maximum F.A.R. should be 1.2, 1.5, 1.2, and 1.8 with a note added as follows: The bonus provisions permit an increase in F.A.R. to 1.5, 2.0, 1.5, and 2.4 by special permit.

Recommended Action: Correct the table.

[Table corrected. Footnote added.]

P A R T 4

Draft Capital Improvement Grant Application

Text

EXHIBIT A - PROJECT DESCRIPTION (CONT.)

beneficial economic gains to the community.

On June 23, 1973, a resolution was passed which supported the proposed Porter Square Station, and was developed in coordination with the Porter Square Transportation Advisory Group.

On April 8, 1975, the Cambridge City Council adopted a resolution supporting the proposed "D" line/station alternative developed in coordination with the Harvard Square Task Force.

On March 22, 1976 the Cambridge City Council adopted a resolution supporting the Authority's efforts to fund the Red Line extension to Route 128 in a number of phases, provided construction is initiated in Cambridge and Arlington simultaneously.

A cooperative Agreement between the City of Somerville and the MBTA was signed on September 22, 1972, which gave support to the Red Line Extension. In 1973, Somerville Mayor S. Lester Ralph stated his official position on the Red Line Extension giving it his full support.

On April 22, 1975 the Arlington Board of Selectmen released a Public Policy Statement Regarding the Red Line Extension in the Northwest Corridor". The Board unanimously supported the Red Line Extension from Harvard Square to Route 128 via the Boston and Maine right-of-way in Arlington. On February 9, 1976 the Arlington Board of Selectmen restated their support of the Red Line Extension and asked that the first phase of the project be extended to at least Arlington Center. On May 5, 1976 the Arlington Board of Selectmen amended its February position to support the funding, design and construction of the Red Line completely through the Town of Arlington as one project, without a terminus, temporary or permanent at Arlington Center and without an above ground parking garage or bus terminal at Russell Common.

The Arlington Board of Selectmen has made it clear since 1972 that the Red Line through Arlington must be completely underground. In addition, on October 4, 1976, the Board rescinded its support for the project as delineated in the Environmental Analysis until such time as the project could be placed completely underground and it was clear that federal funds would be available to construct the project through the Town of Arlington.

Recommended Action: The text should be modified to include the most up-to-date statements by the Board of Selectmen.

[Text has been modified to include the most up-to-date statements by the Arlington Board of Selectmen.]

NOTE: BRACKETED STATEMENTS ARE MBTA RESPONSES.

A-6

Draft Capital Improvement Grant Application

Text

EXHIBIT A - PROJECT DESCRIPTION (CONT.)

PROJECT SCOPE

The project is a 6.4 mile extension of the Massachusetts Bay Transportation Authority's Red Line Rapid Transit from its present terminus at Harvard Square to Arlington Heights in the Town of Arlington, Massachusetts. See Figure A-1.

From Harvard Square, the route proceeds north, generally following Massachusetts Avenue to Davis Square in Somerville. The route then turns west on the Fitchburg Freight Cutoff to Alewife just south of the Dewey and Army Circle where Route 2 from the west terminates at the Alewife Brook Parkway. The project includes the discontinuance of freight service on the Freight Cutoff from Grove Street just east of Davis Square to a point just west of Massachusetts Avenue in Cambridge.

The route proceeds north and west from Alewife along the Lexington (Bedford) Branch of the Boston and Maine Railroad to Arlington Heights. Commuter rail and freight operations on this line would be discontinued. Commuter rail patrons would be affected by the discontinuance of service on this line and on the ten to fifteen miles of railroad right-of-way above Arlington Heights. These riders will be provided with alternative service, the nature of which will be determined by the Minuteman Area Transit Improvement Study.

The Harvard Square Station would be rebuilt and new stations would be constructed at five other locations as follows: Porter Square in Cambridge, Davis Square in Somerville, Alewife in Cambridge, Arlington Center and Arlington Heights in Arlington.

Separated by type of construction method, the 6.4 mile project would include 1.5 miles of tunnel/cut-and-cover, 1.4 miles of tunnel/deep bore, 3.4 miles of depressed/open cut or decked over, and .1 mile of at grade construction. See Table A-1 for a detailed description of project alignment characteristics.

All stations will provide bus unloading and loading areas and kiss-and-ride facilities. Provision for transfers for the Fitchburg Division commuter rail patrons will be incorporated into the Porter Square Station. A parking structure for park-and-ride patrons will be constructed at Alewife with spaces for 2,000 cars, as well as 80-150 spaces for kiss-and-ride patrons. Garages have been proposed for Arlington Center and Arlington Heights which would have 150 spaces for park-and-ride vehicles although agreement has not been reached as yet concerning design, size and siting for either facility.

Approximately 90 percent of the project's right-of-way falls within existing railroad or public streets rights-of-way. The project does not include in its scope the acquisition of the required railroad rights-of-way as they are being acquired under a separate project.

Construction of the Project from Harvard Square to Arlington Heights will require the displacement of 21 businesses and 22 residences, the total taking of 22 properties, the partial taking of 13 properties, and the acquisition of 75 permanent easements.

Two turnback and layover facilities, one at Alewife and one at Arlington Heights, are part of the project. The reconstruction of two minor bridge structures is required in Arlington to provide for the expanded right-of-way.

The Town of Arlington does not concur with the proposal that portions of the Red Line Extension in the Town of Arlington should be constructed either in an open cut or at grade. This has been a consistent position since 1972.

Recommended Action: The application should be revised as a result of additional engineering work to provide for a completely underground configuration through the town.

Application has been revised.

As a result of concern over a parking garage for transit riders in Arlington Center, there is presently no parking proposed in the Center. The Town of Arlington has never accepted the proposals for the Arlington Heights station since final analysis has not been undertaken between Arlington Heights and Route 128.

Recommended Action: A careful analysis must be undertaken as part of the pre-grant engineering process in Arlington Center to determine whether or not any parking for transit riders is appropriate. The station at Arlington Heights and related parking must be analysed in the context of activities that may take place in Arlington Heights/East Lexington area.

This will be one of the tasks assigned to the pre-grant engineers/architects.

Draft Capital Improvement Grant Application

Text

The proposed 1,200 feet of lay up track is inconsistent with EIS which refers to 1,400 feet.

Recommended Action: Define the lay up track more precisely.

[Lay-up track is defined more precisely in Chapter VI of the Final EIS.]

The position of the Town of Arlington is that the Red Line must be completely underground. The description in the text of the type of structure is inconsistent with the position of the town.

Recommended Action: Provide additional engineering analysis to permit underground configuration through the Town of Arlington.

[Alignment will be entirely underground through the Town of Arlington.]

PROJECT ALIGNMENT CHARACTERISTICS									
Segment	Length in Feet	Type of Structure	Horizontal	Vertical	Crossovers	Lay-Up Track	Alignment Conditions		
Harvard Square Station (complex)	1,450	Tunnel/Cut-and-Cover	250 Foot Min. Radius	0.5% Minimum 3.6% Maximum	N/A	None	None	None	None
Harvard Square to Porter Square	4,100	Tunnel/Loop-Here	500 Foot Min. Radius (Inbound) 400 Foot Min. Radius (Outbound)	0.0% Minimum 1.5% Maximum	North of Harvard Square Only	None	None	None	None
Porter Square Station	440	Tunnel/Cut-and-Cover	Tangent	0.0%	N/A	N/A	None	None	None
Porter Square to Davis Square	1,010	Tunnel/Loop-Here	100 Foot Min. Radius	0.0% Minimum 0.4% Maximum	None	None	None	None	None
Davis Square Station	440	Tunnel/Cut-and-Cover	Tangent	0.0%	N/A	N/A	None	None	None
Davis Square to Alewife	4,500	Tunnel/Cut-and-Cover	1500 Foot Min. Radius	0.0% Minimum 2.0% Maximum	West of Davis Square & East of Alewife	N/A	None	None	None
Alewife Station	440	Tunnel/Cut-and-Cover	Tangent	0.0%	N/A	N/A	None	None	None
Alewife to Arlington Center	8,010	Mostly Dr-Pressed Section with Light Decking	400 Foot Radius	0.0% Minimum 1.45% Maximum	North of Alewife	1200 Feet North of Alewife	None	None	None
Arlington Center Station	440	Tunnel/Cut-and-Cover	Tangent	0.0%	N/A	N/A	None	None	None
Arlington Center to Arlington Heights	10,210	Mostly Dr-Pressed Section with Light Decking	800 Foot Min. Radius	0.0% Minimum 2.4% Maximum	West of Arlington Center	None	None	None	None
Arlington Heights Station	440	At Grade	Tangent	0.41%	N/A	N/A	None	None	None
TOTAL	33,500								

Table A-1

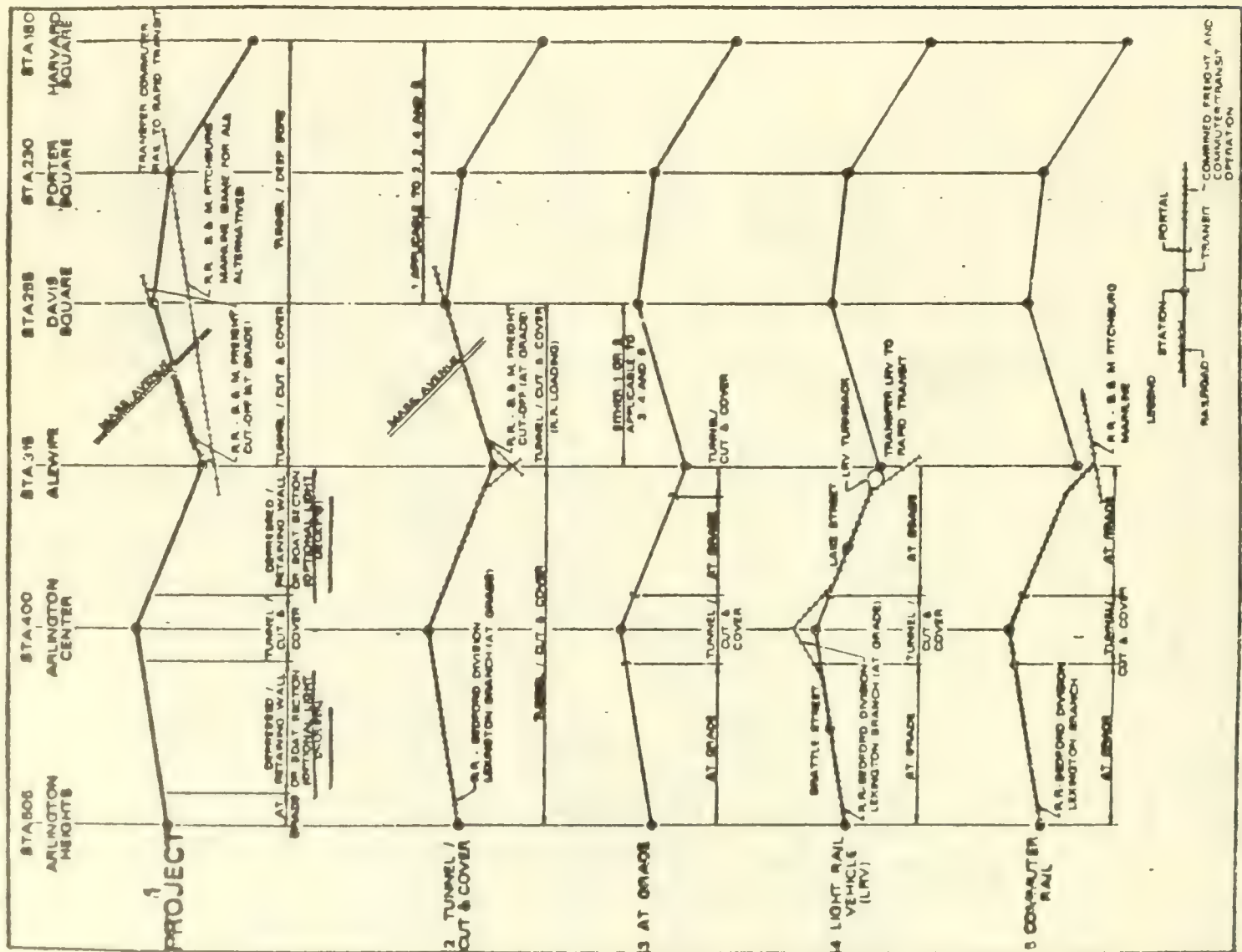
Draft Capital Improvement Grant Application

Text

The provision for "optional light decking" is inconsistent with the position of the Town of Arlington.

Recommended Action: Correct the proposal to insure that the decking is a part of the Capital Grant Application.

[Graphic has been corrected.]



ALTERNATIVE MODE
CONSTRUCTION METHODS
BY LINE SEGMENT

RED LINE EXTENSION STUDY
Massachusetts Bay Transportation Authority
De Lury, Custer & Company / Switchup & Parcel and Associates Inc.



Draft Capital Improvement Grant ApplicationEXHIBIT A - PROJECT DESCRIPTION (CONT.)DETAILED PROJECT SCOPE (CONT.)Stairs/Elevators/Escalators

Stairs and escalators would be located at both station entrances. Preliminary designs call for one combination stairway/escalator at the east entrance and four at the west entrance; the final size and number of these facilities will be based on the final design boarding forecasts.

Elevators would be provided at the west entrance to facilitate pedestrian movement from the upper levels of the parking garage to the lobby, particularly for handicapped users.

Fare Collection

Fare collection facilities would be located at the east and west entrances. The number of boardings at the east entrance would determine whether or not the fare collection facility would be operated during all station hours. The east entrance might only be manned during peak hours in the initial years of Red Line service. Full-time service would be provided if warranted by user demand.

Intermodal Connections

Transfers between the Red Line Extension and the commuter rail lines would be made at the Porter Square Station. However, provisions may be made for an additional commuter rail station transfer facility at Alewife.

External Emergency and Ventilation Shafts

Two ventilation and emergency shafts would be required for the Alewife Station. These would be located to minimize impact to the above ground environment. Preliminary plans call for one shaft opening on the surface immediately adjacent to the rear of Lehigh Metal Products and the other opening west of Alewife Brook Parkway at the east face of the proposed parking garage.

Bus Handling Facilities

All bus loading/unloading would occur at the parking garage at the ground level. Escalators and stairways would provide quick access from the bus platforms to the station platform. Additional temporary layover facilities would be provided outside the garage in the form of an additional lane on the station service roads. Bus storage or maintenance facilities would not be provided at the Alewife Station complex. Buses making terminal runs to the station would proceed to other MBTA facilities for overnight storage or repair and maintenance work.

As is the case with other MBTA bus loading/unloading operations at transit station, bus fares would not be collected at the station. This procedure allows for expeditious loading and unloading of buses and minimizes bus turn-around times at the station.

The Town of Arlington has consistently stated since 1972 that Alewife cannot be the terminus of the Red Line. This vague statement in the text can be assumed to mean that the Bedford Branch Railroad will provide shuttle service between Bedford, Lexington, and Arlington and Alewife. This is inconsistent with the policy of the Town of Arlington.

Recommended Action: This statement should be clarified.

Any commuter rail transfer facility at Alewife would be on the Fitchburg Main Line and not the Lexington Branch.

Draft Capital Improvement Grant Application

Text

This sentence makes no sense.

Recommended Action: Clarify.

[Statement has been deleted.]

2. It also will eliminate much of the existing railroad distance between the residential community and Spy Pond.

3. In addition the area south of the station, over the depressed portion of the alignment, could be utilized by the Town of Arlington for future development of a linear park.

Drainage of the track bed in depressed sections would necessitate the use of pumping facilities to eliminate potential flooding during periods of heavy rain.

Due to the proximity of this section to the marshy areas adjacent to the Alewife area and Spy Pond, the water table is high; requiring special care to be taken with waterproofing techniques.

The major utilities requiring relocation or support within this section are a 24-inch storm drain at Orvis Circle and a 42-inch storm drain near Elmhurst Street which outlets into Spy Pond. Other utilities include numerous storm drains ranging in size from 15 to 20 inches as well as a 16-inch gas line crossing Lake Street. In addition, there are 20- and 24-inch MDC water mains and a 16-inch gas line under Massachusetts Avenue in the Arlington Center Station area. Treatment of these utilities requires further study during the design phase.

Arlington Center Station

Entry and Exit Points

The cut-and-cover station proposed for Arlington Center would be located within the Boston and Maine right-of-way. The station would extend 450 feet from Whittemore Historic Park southeast to a point midway between Swan Place and Lombard Terrace. Three principal entry/exit points would be incorporated into a street underpass system.

One entrance would be located in the northwest quadrant of Arlington Center, adjacent to the Coolidge Bank, at 635 Massachusetts Avenue. A second entrance, connected to the first by an underpass beneath Mystic Street, would be located in the northeast quadrant near the laundromat at 483 Massachusetts Avenue. This entrance could serve as a direct entrance to an open mezzanine-level plaza as part of a future joint development project. The third entrance would be connected to the others by a free zone which would serve as a pedestrian underpass below Massachusetts Avenue. Located on a small triangular parcel of land between the Boston and Maine right-of-way, Massachusetts Avenue and Swan Place, this entrance would serve the east-west flow of pedestrian traffic along both sides of Massachusetts Avenue.

Stair, Elevator and Escalator Locations

A stairway and up escalator would be located at each of the three entrances. These would connect the surface level with the mezzanine level approximately 20 feet below grade, fare collection operations would be located at this level. The station platform would be approximately 35 feet below Massachusetts Avenue and access from the mezzanine level to the end loaded center platform would be provided by a six-foot-wide stairway, a six-foot-wide escalator, and a five-foot-wide ramp from the north.

Draft Capital Improvement Grant Application

Text

Fare Collection

Only one fare collection area would be required for the end loaded center platform. The fare zone, which would be separated from the pedestrian underpass system beneath Mystic Street and Massachusetts Avenue, would have two fare booths at opposite ends of a bank of turnstiles. The booths would be situated so that there would be a clear view down the underpass corridors to the entrances; the full-time attendant booth would be located nearer to the north-east entrance as this booth would provide a better view of the three entrance corridors.

Although the end loaded platform would require pedestrians to walk a greater distance from the southeast entrance, it would not require duplicate fare collection facilities.

Platforms and Intermodal Connections

No intermodal connections with other rail facilities are planned for the Arlington Center Station. The 32-foot-wide central platform would be located about 35 feet below Massachusetts Avenue and would extend from the southern end of Whiteacre Historic Park to a point just about midway between Swan Place and Lombard Terrace. Seven feet of clearance would be provided at either side of the 17-foot-wide access area composed of the stairway, an escalator and the ramp.

External Emergency and Ventilation Shafts and Other Apparatus

Emergency and ventilation shafts for the station would be located in the right-of-way east of Swan Place or west of Mystic Street. Some difficulty may be encountered at either of these sites as they are considered prime locations for future air rights development. Design should not preclude this development possibility.

Bus Handling Facilities and Parking

Due to the existing heavy north-south traffic, preliminary design efforts attempted to minimize bus left turning movements from Mystic Street. Since the Town of Arlington has designated all conveniently located off-street locations as having high priority for future development, bus loading/unloading facilities for the proposed Arlington Center Station would be located at curbside. Four such areas have been proposed. One curbside dropoff point near Railroad Avenue would be the terminating point for buses going south on Mystic Street. These buses would then be rerouted north along Mill and Summer Streets. Curbside dropoff points would also be used by buses which serve Arlington Center by way of Medford, Chestnut, Mystic and Pleasant Streets. A loading/unloading area for these routes could be designated on the left hand side of Medford Street at Massachusetts Avenue.

Bays for Massachusetts Avenue through bus traffic could be provided just east of Swan Place on the south side of the street, and west of Medford Street on the north side of the street. The bay on the north side of Massachusetts Avenue could also serve terminating buses routed along Broadway; return to the Broadway route would be by way of Mystic, Chestnut and Warren Streets. Since most terminating routes would primarily serve rush hour traffic, with ridership heavily weighted toward inbound traffic in the morning hours and outbound traffic in the evening hours, the requirement for special off-street bus waiting areas would be minimal.

The Town of Arlington has indicated that the revised bus service strategy must be developed jointly by the MBTA and the Town of Arlington. The statements about loading and unloading areas and terminating routes are misleading since there is no revised bus strategy at this time that has met with the approval of the town.

Recommended Action: The MBTA should work with the Town as part of the pre-grant engineering in Arlington Center and Arlington Heights to develop a workable and consistent bus feeder system.

A new feeder bus strategy has been developed. It is briefly described on Page II-50 of the Final EIS. Finalization of any feeder bus network will be done with input from the Town of Arlington.

Draft Capital Improvement Grant Application

At the public hearing on the project, the proposal was made to locate the parking facilities and kiss-and-ride areas on the site of the present Russell Common Municipal Parking Lot in the form of a combined parking structure and bus terminal. Subsequent to the hearing substantial objection was raised to this proposal by representatives of St. Agnes Parish whose facilities about Russell Common. As a result the Arlington Board of Selectmen have gone on record in opposition to an above-ground parking structure on Russell Common. These developments necessitate a revision in the Authority's plans for these facilities and an architectural and engineering team has been engaged to prepare them and to revise the bus routing and station access plans as required.

Right-of-Way Requirements

The primary right-of-way requirement would be the acquisition of the entire length of the Boston and Maine Lexington Branch right-of-way. Construction of the East Arlington segment of the Red Line would necessitate abandoning this right-of-way through Arlington, Lexington, and Bedford.

Construction Methods

The major portion of transit construction along this segment of the Red Line Extension would be in a depressed section. Tunnel/cut-and-cover construction would be utilized in both the Arlington Center and Alewife Station areas and in areas where streets pass over the alignment.

Cut-and-cover construction between Alewife Station and Route 2 would require temporary relocation of Alewife Brook prior to excavation. Once the box section for the tunnel/cut-and-cover has been completed and covered over, Alewife Brook would be relocated to its original channel. Cut-and-cover construction would terminate at the northern edge of Route 2 with a transition through a portal into a depressed section. Approximately 1,600 feet of light decking would be placed above this section to cover a turnback and storage facility for Alewife Station. Beyond this point, the section would be approximately 34 feet wide.

The depressed section would either consist of two retaining walls with prestressed concrete deck beams placed at the top to support the light decking or it could be a boat section with a continuous bottom slab added. Although the depth and characteristics of the groundwater table will determine the final type of open cut construction, the likelihood of a high water table, based on previous boring data, suggests the construction of the boat-type depressed section. Further investigation during final design may result in decreasing the length of the boat section.

Small lengths of tunnel/cut-and-cover construction would be utilized where Lake Street, Linwood Street and Pond Lane cross the depressed section to provide proper support for roadway traffic.

All buildings within the zone of influence would require protective measures to minimize damage caused by settlement or vibration. These requirements would be determined for each case with conventional underpinning being used where a less expensive technique would not provide adequate protection. Other methods to reduce

The Town of Arlington does not accept a depressed section. It must be covered. The reference to 1,600 feet of light decking is inconsistent with Table A-1 which refers to 1,200 feet.

Recommended Action: The proposed Red Line must be completely underground to be consistent with the position of the Town of Arlington. In addition, the storage and turn-back facilities should be more carefully delineated.

The project alignment will be completely underground through the Town of Arlington. See Chapter VI of the EIS for a detailed description of the turnback facility.

Draft Capital Improvement Grant Application

Text

settlement over a wide area include cut-off walls and grouting of soils. All utility lines would be carefully protected or relocated outside the depressed section during construction.

Arlington Center to Arlington Heights Line Segment

The horizontal and vertical alignment for this segment was developed following detailed analysis of the alternatives in cooperation with Arlington civic organizations. Principal criteria included limiting recreational and residential land taking by remaining within the Lexington Branch right-of-way to the maximum extent possible, and placing the Arlington Heights Station at grade.

Major vertical constraints would be the Mill Brook culvert west of Water Street and street and utility crossings along the right-of-way.

Through Arlington Center the existing Lexington Branch is at-grade, with crossings at Massachusetts Avenue, Mystic Street, Water Street and Mill Street. Massachusetts Avenue and Mystic Street are major traffic arteries; adjacent property is heavily developed in commercial uses. The railroad bisects the Whittemore Historic Park and at Mystic Street passes adjacent to Winslow Tower, a multistory housing complex for the elderly.

Between Water and Mill Streets, a municipal parking lot, Fowles Pond Field, and New England Farms (a large food processing plant) lie on either side of the rail line. There are five railroad sidings in this area, four serving New England Farms and one community siding serving several small businesses.

Beyond Mill Street, the railroad is on embankment along Arlington High School. The Lexington Branch continues on embankment, varying in height from a few feet to 25 feet west of Forest Street. Between Forest and Lowell Streets near Mount Gilboa, the terrain rises and sections of the Lexington Branch through Arlington Heights are depressed as much as ten feet below ground level. There are no at-grade crossings beyond Mill Street. The railroad passes over Grove Street, Brattle Street and Forest Street in the embankment area and under Lowell Street and Park Avenue along the steep depressed area. At Lowell Street and Park Avenue, the steep approaches to the grade separation structures create "humpbacked" crossings with poor vertical sight distances. These bridges are old wooden structures with 27-foot spans and five-ton load limits.

Major utility crossings in this segment include a 42-inch MDC interceptor sewer between Water and Mill Streets, a 36-inch MDC sewer near Arlington Heights, a 30-inch storm drain near Ryder Street, a 36-inch storm sewer near Summer Street, and a 24-inch MDC water main near the MDC pumping station. In addition to these utilities, there is a 16-inch high-pressure gas transmission line east of Grove Street.

Mill Brook crosses the Boston and Maine Lexington Branch twice: East of Mill Street and at Arlington Heights.

Within this segment of the Red Line Extension Project, all existing railroad trackage, structures and embankment would be removed. New grade separation structures would be built for all streets crossing the depressed section of the project. Since track level in the depressed section would be 18 to 25 feet below ground, the inadequate grades and clearances at the Brattle Street and Forest Street crossings would be eliminated and sight distances at the Lowell Street and Park Avenue bridges would be improved. In critical areas--where the right-of-way is narrow and abutment residential structures and along the Arlington High School football field--the depressed transit-way would be decked.

This statement seems to indicate that the configuration of the line through Arlington as proposed is consistent with the wishes of town officials and citizen groups. This is not the case. In addition, the town at the public hearing on the project held on March 23, 1976, stated that it did not accept the proposals set forth in the environmental analysis for the Arlington Heights station.

Recommended Action: The project description should recognize the position of the Town of Arlington and the Arlington Heights station must be carefully analyzed in the context of the transportation needs west of Arlington Heights.

The project alignment will be completely underground through the Town of Arlington.

There is no municipal parking lot between Water Street and Mill Street.

Recommended Action: Clarify and correct.

Text corrected.

The position of the Town of Arlington is that the line should be covered throughout the town.

Recommended Action: Develop a more refined project that is covered.

The project is a tunnel/cut-and-cover through the entire Town of Arlington.

Draft Capital Improvement Grant Application

Immediately beyond Arlington Center Station, transitways would be in tunnel/cut-and-cover. The proposed alignment would turn westerly on a compound curve, slightly north of the railroad right-of-way adjacent to the Winslow lower property line. The line would continue westerly, rising on a 2.4 percent grade to clear the Mill Brook culvert and the two MDC sewer lines.

Beyond the tunnel portal west of Water Street and the ascent to a depressed grade, the line would generally follow the centerline of the existing railroad right-of-way. The grade would be relatively flat through Grove Street, but would increase beyond Grove Street through Forest Street in order to follow the rising ground level and to minimize excavation requirements. Cut-and-cover construction would be utilized under Mill, Brattle and Forest Streets. Due to the higher profile of the transit line, some major reconstruction of these streets would be necessary. Since the existing railroad right-of-way narrows to 35 feet in the vicinity of Brattle Street, a small parcel of land would have to be acquired.

Beyond Forest Street, the line would ascend on a 2.5 percent grade to the Arlington Heights Station.

The plans presented at the public hearing proposed that the Arlington Heights Station be constructed at-grade on a site currently owned by the MBTA and used as a bus storage facility. Included as part of the station development will be the construction of a parking garage for 150 automobiles. Additional provisions will be made for kiss-and-ride and bus unloading and loading, all of which will take place with the garage, all entrances and exits from and onto Massachusetts Avenue.

Subsequent to the public hearing, the Arlington Board of Selectmen revised its position to support the extension entirely through Arlington as a single project. Recommendations of the current Minuteman Area Study therefore will probably require a revision in these plans for the Arlington Heights station before construction would be initiated.

Right-of-Way Requirements

The primary right-of-way acquisition for the recommended alternative from Arlington Center to Arlington Heights would be the Boston and Maine Lexington Branch right-of-way. Transit construction would necessitate the abandonment of railroad operations through Arlington, Lexington and Bedford. The Boston and Maine Lexington Branch right-of-way is being acquired under a separate project.

Construction Methods

A major portion of this segment of the Red Line would be depressed with retaining walls. The types of depressed sections selected in final design will be contingent on hydraulic and soils conditions and cost feasibility. An extensive boring program would be required to establish construction parameters. Preliminary investigations indicate that retaining wall construction would be viable; however, if a high groundwater table is found, a boat section with a continuous bottom slab may be warranted.

Discussions with the Housing Authority since the public hearing on the project have indicated that some property belonging to the Housing Authority which owns Winslow Towers will have to be taken or used as part of the construction.

Recommended Action: This situation should be clarified.

The alignment has been modified so no takings are necessary for construction.

There is no indication in the Table of Properties to be Acquired that property on Brattle Street will be taken.

Recommended Action: Clarify and determine whether or not property must be acquired.

A permanent easement would be required, not a taking.

As stated previously, the Town of Arlington has not accepted the proposals set forth for Arlington Heights.

Recommended Action: The Arlington Heights/East Lexington area must be studied in its entirety to determine the most appropriate location and configuration for a station in that area.

The Arlington Heights/East Lexington area will be studied in its entirety to determine the most appropriate location and configuration for a station in the area during the pre-grant or preliminary design phases for the Arlington Heights Station.

Text

Draft Capital Improvement Grant Application

Certain buildings, such as Winslow Tower and Brigham's Processing Plant, would require some protective measures to prevent ground movement, surface settlements, and vibration. The needs of each particular case would be studied and conventional underpinning would be used where no other acceptable alternative would be practical. In many cases, grouting or cutoff walls may be more effective than underpinning.

Construction would progress from Arlington Center to Arlington Heights. The existing railroad could be utilized to deliver and remove materials west of the work face. Handling materials via the railroad would minimize trucking impacts on local streets in the populated areas of Arlington. In less populated areas materials could be transferred to trucks for final disposition.

In areas where the line passes under roadways, small lengths of cut-and-cover construction would be required, in lieu of construction bridges. Traffic would either be rerouted to adjacent streets or temporary bypass routes built for use until temporary decking is in place.

Attached herewith is a complete budget for all work associated with the engineering, construction and administration of this project, together with the proposed schedule of Federal funding.

Additionally, all purchases for this project will be made through competitive bidding in accordance with the established procedures of the Authority and Federal Guidelines.

There is considerable public misunderstanding concerning this statement.

Recommended Action: A clarification concerning the effects of ground movements, surface settlements and vibrations should be made as soon as possible.

Additional clarification concerning these effects has been added to the text of the Final EIS. See Page II-185.

Draft Capital Improvement Grant Application

Text

The phrase "mostly depressed with light decking" is inconsistent with the long-time statement of the Town of Arlington that the line must be completely covered.

Recommended Action:
The project definition should be amended to provide a completely covered configuration.

The project definition has been amended accordingly.

PHASE II
ALEWIFE TO ARLINGTON CENTER
CONSTRUCTION SEGMENT LEVEL BUDGET
1977-1978 Dollar Values

Construction Contract Segments	MAC Code	Description	Amount
8. Alewife to Arlington Center (mostly depressed with light decking)	15.13.20	Transit Structure	\$27,763,000
		Floating Slab	4,297,000
		Trackwork	4,640,000
		Decking & Repaving	90,000
		Ventilation	1,055,000
	15.02.08	Electrification	2,475,000
	15.02.09	Signalization	1,763,000
	15.13.10.12	Utility Relocation	579,000
	15.14.00	Remove RR Track	126,000
		Total	\$42,788,000
	15.06.10	Right-of-Way Relocation	\$ 10,000 000
		Total	\$ 10,000
	15.08.01	Professional Services	\$ 3,840,000
	15.15.02	Field Inspection	2,139,000
	15.15.02	Force Account	428,000
	15.16.00	Project Administration	2,139,000
		Total	\$ 8,546,000
	32.00.00	Contingencies	4,450,000
		Grand Total	\$55,794,000

Draft Capital Improvement Grant Application

Text

The terms "mostly depressed with light decking", "depressed section", and "at grade" are inconsistent with the position of the Town of Arlington.

Recommended Action: The project should be amended to conform with town policy.

The project description has been amended accordingly.

CONSTRUCTION PHASE					
1st Year	2nd Year	3rd Year	4th Year	5th Year	
<div> <div>Harvard Square Station (Cut-and-Cover Construction)</div> <div>Harvard Square to Porter Square (Tunnel/Deep Bore)</div> <div>Porter Square Station (Cut-and-Cover Construction)</div> <div>Porter Square to Davis Square (Tunnel/Deep Bore)</div> <div>Davis Square Station (Cut-and-Cover Construction)</div> <div>Davis Square to Alewife (Cut-and-Cover Construction)</div> <div>Alewife Station (Cut-and-Cover Construction)</div> <div>Alewife to Arlington Center (Mostly depressed with light decking)</div> <div>Arlington Center Station (Cut-and-Cover Construction)</div> <div>Arlington Center to Arlington Hgts. (Depressed Section)</div> <div>Arlington Heights Station (At Grade)</div> <div>Purchase of Rapid Transit Vehicles (94)</div> <div>Existing System Improvements</div> </div>					

Draft Capital Improvement Grant Application

Text

potential park-and-ride patrons would instead use bus service or be dropped off by auto at Alewife, it is predicted that over 90 percent of these persons would probably drive all the way to their final destinations. In short, it is clear that there is a demand for some form of improved transit service beyond Alewife.

Alignment Options

There are three possible alignments for an extension of the Red Line beyond Alewife utilizing existing rights-of-way: Massachusetts Route 2, the Boston and Maine Fitchburg Main Line and the Boston and Maine Lexington Branch. These are discussed below.

1. Route 2

Route 2 follows almost a direct line between Alewife and Route 128, and would thus be the shortest connection to Route 128 of the three alignments. Route 2 has sufficient capacity to accommodate present and future traffic volumes. If the two center lanes were removed and replaced by transit tracks the highway capacity would still be adequate. However, the right-of-way that could be freed for transit use would be narrow based on construction standards established for clearance of the Red Line cars. The existing grades along much of this section of Route 2 are too long and steep for rapid transit cars, and therefore a large amount of excavation would be required. Aside from the engineering problems, the Route 2 alignment is undesirable because it does not pass through any significant population concentrations or commercial centers, and therefore has little potential for attracting walk-in riders.

2. The Railroad Alignments

Of the two railroad alignments beyond Alewife, the Lexington Branch would much better meet the goals of extending transit beyond Alewife. The Lexington branch bisects the town of Arlington, closely paralleling heavily-traveled Massachusetts Avenue. More than one-third of the peak-hour riders who would be attracted to Alewife--by all access modes--if Alewife had unlimited parking would either originate within Arlington or would travel over Arlington streets enroute to Alewife. Although the Fitchburg route bisects the Town of Belmont, less than one-fourth of all potential

There has been no careful analysis of the true impacts of a terminus at Alewife. This statement has never been substantiated with an analysis of the amount of increased congestion on Arlington streets although it has been requested time and time again by the Town of Arlington.

Recommended Action: The work program for the pre-grant engineering in Arlington Center must include work elements that will address the traffic impacts in Arlington if the terminus is at Alewife, particularly if Alewife is opened prior to the opening of stations in Arlington.

The work program for the pre-grant engineering in Arlington Center will include work elements related to the impacts of traffic at Arlington Center resulting from the Red Line Extension.

Draft Capital Improvement Grant Application

Text

peak-hour Alewife riders would originate in Belmont or travel over Belmont streets enroute to Alewife. If rapid transit service were extended beyond Alewife all the way to Route 128, the Lexington Branch would provide a much more favorable interception point than would the Fitchburg Main Line. The Lexington Branch intersects Route 128 three miles north of Route 2 and two miles south of Route 3. The Fitchburg Main Line intersects Route 128 seven miles south of Route 2, and only two miles north of the MBTA's existing Riverside terminal.

The Lexington Branch is currently used by one round trip passenger train each day (weekday only) and by a local freight train which serves approximately 12 shippers. If this route were used for a rapid transit extension, passenger service could be discontinued without significant inconvenience since ridership is small. Freight service could be continued, if necessary, by joint use of trackage at night, but only if the Red Line Extension is at grade through Arlington. By contrast the Fitchburg route is the Main Line of the Boston and Maine railroad between Boston and areas to the West. The line serves numerous through and local freight trains each day and provides frequent commuter service used primarily by riders from communities outside Route 128. The right-of-way could not be used for rapid transit unless major changes are made in Boston-and Maine freight operations and commuter service is discontinued, or unless separate tracks are provided for railroad and rapid transit operations. The latter option would greatly increase construction costs for this route, whereas the former option would have strong disbenefits for present users of rail passenger and freight service.

In summary, the Boston and Maine Lexington Branch would be the most desirable route for extending rapid transit beyond Alewife in terms of ridership potential, ease of construction and minimization of negative impacts on existing railroad services. It is assumed that the Fitchburg Main Line would continue to provide freight and commuter railroad service to North Station, with a transfer to the Red Line Extension at Porter Square.

Terminal Options

Several terminal options are examined in the following section: Alewife, Arlington Heights, and Route 128 in Lexington.

The Town of Arlington does not accept the proposal for joint usage of the railroad right-of-way by rapid transit and freight users. The position of the town is clear. If the rapid transit is to be extended, it must be underground, through the town, and the freight line must be discontinued.

Recommended Action: Amend this statement to include the position of the Town of Arlington.

Dual Transit and Freight Operation is discussed on pages VII-14 and 15.

This Capital Grant Application is for a subway in tunnel/cut-and-cover through the entire Town of Arlington which will require discontinuance of the freight line.

Draft Capital Improvement Grant Application

For purposes of project definition, Route 128 was considered the ultimate terminal point for the Red Line Extension. This is in response to policy positions established by the Cities of Cambridge and Somerville and the Town of Arlington. The MBTA is currently sponsoring a transit improvement study in the Lexington area to assess the potential for extending the Red Line beyond Arlington Heights. The Environmental Impact Analysis Report assumes that the Red Line terminal would be at Arlington Heights. Of those alternatives considered in detail in this study, Arlington Heights is the preferred terminal based on potential ridership. A terminal at Route 128 would not appreciably increase negative impacts within the area covered by this report. However, due to the limitation of funds, it is assumed that the project would be constructed in phases, beginning with the Harvard Square-Alewife section, continuing with the section to Arlington Heights and then proceeding to Route 128 if projected patronage levels warrant such an extension.

1. Alewife Terminal

Locating a permanent Red Line Extension terminal at Alewife would not satisfy the demand distribution pattern for the North-west Corridor. Forecasts for 1980 (earliest opening day) indicate approximately 11,000 boardings at the two Arlington stations. This concentration of demand is among the highest of any station planned outside of the regional core. The combined volume at these two stations is higher, for example, than the existing combined volume at the Kendall Square and Charles Street stations, and only slightly lower than the combined volume at the Kendall Square and Central Square stations.

The demand for parking at Alewife would exceed the capacity of a 2,000-car garage to accommodate all patrons who would like to park at the Alewife Station. Data for 1980 indicate that this garage would become filled during the morning peak hour -- when the heaviest traffic volumes occur. Lack of parking supply usually results in higher levels of kiss-and-ride patronage as well as in the loss of some transit ridership. A similar situation is presently occurring at Quincy Center station.

The reference to Arlington Heights as the preferred terminal based on potential ridership assumes that the Arlington Heights station and terminal has been developed through a sound and thorough planning process. The opposite is true. The Arlington Heights station and terminus was selected by default. Only one site was examined, and that was selected because it was owned by the MBTA. No sites were examined west of the Arlington/Lexington line, and the site selected was done prior to any input being available from the Minuteman Area Transit Study.

Recommended Action: Information from the Minuteman Area Transit Study is now available. Therefore, a careful re-evaluation of alternative locations for an Arlington Heights/East Lexington station must be undertaken using sound planning principles.

The Minuteman Area Transit Study has been studied, and the bus yard site still remains the most logical location for the Arlington Heights Station and Garage.

The position of the Town of Arlington is that Alewife cannot be the permanent terminus of the Red Line. This statement briefly explains the reasons why.

Recommended Action: It should be noted that the Town of Arlington, the City of Cambridge, and the City of Somerville, and numerous citizen groups have indicated that Alewife cannot be the terminus of the Red Line.

Alewife will not be temporary of permanent terminus.

Draft Capital Improvement Grant Application

Text

The Alewife terminal option would result in the most serious congestion problem of any of the options discussed in this chapter.

The addition of 700 parking spaces in Arlington under those alternatives which extend the Red Line to Arlington Heights, would relieve the congestion at the Alewife station. This is not to say that the problem of limited parking relative to demand at Alewife would be totally alleviated by an extension through Arlington, or even all the way to Route 128. The data indicate that even with an extension to Arlington, the Alewife garage would be filled around 9:00 a. m. after the end of the peak-hour. However, all options which propose an extension of transit service beyond Alewife with the exception of feeder buses on city streets would be superior to the Alewife terminal option in terms of access-oriented congestion, and accommodating potential demand.

The actual extent of congestion attributable to transit access would depend more on the configuration of the new roadway system at Alewife, however, than on the degree of transit extension beyond Alewife. The Massachusetts Department of Public Works has proposed a transit access roadway configuration which would maximize direct access to the garage/station facility from every major direction and which would minimize conflicts with other traffic flows. This roadway configuration has been planned to minimize to the greatest extent possible the congestion that would be generated by a major transit facility. A number of other roadway schemes are currently under study by the Massachusetts Department of Public Works with emphasis on providing adequate access to the transit station.

Nevertheless, concern about congestion associated with a permanent terminal at Alewife has been a major issue for the local governments involved, and is a major reason for community support of the extension of improved transit service beyond Alewife. As recently as June 1975, the Cambridge City Council passed a resolution (primarily concerning the Porter Square station location) which stated that the Council's support was "contingent upon the finding that the Red Line will be carried to Route 128, and that construction of the segment running northwest from Alewife Brook will begin no later than the construction between Davis Square and Alewife Brook."

The reference to 700 parking spaces in Arlington is not valid. The number of parking spaces to be developed will be contingent on the careful analysis of the Arlington Center and Arlington Heights/East Lexington areas.

Recommended Action: Undertake additional studies as soon as possible to determine how much parking, if any, should be supplied.

Such studies will be part of the pre-grant engineering work to be performed at Arlington Center.

The position of the Town of Arlington is that when construction begins northwest from Alewife Brook, there must be funds available to construct the project underground through the town.

Recommended Action: Include the position of the Arlington Board of Selectmen dated October 4, 1976.

The latest position of the Arlington Board of Selectmen, dated October 4, 1976, has been added to the Capital Grant Application and the Final EIS.

Draft Capital Improvement Grant Application

Text

The designation of Alewife as a terminal for a period of time is inconsistent with the position of the City of Cambridge and the Town of Arlington.

Recommended Action: Include excerpts from the position statements of the City of Cambridge and the Town of Arlington to make it clear that this statement is inconsistent with state and community objectives.

[These policy statements have been included.]

The state and local governments involved have agreed on the rejection of Alewife as the permanent Red Line terminal as reported in the 1974 and 1975 Transit Development Programs. This decision was based on the desire to serve the additional ridership that would be generated by extension beyond Alewife; to increase the total number of park-and-ride spaces being provided, and to conform to the development goals of the Town of Arlington. Nevertheless, when considering constraints imposed by the availability of capital funds for project construction the possibility of Alewife as an interim terminal does exist. The designation of Alewife as a terminal for a certain period of time, based on financial considerations, would be acceptable in terms of transportation service. User demands on Alewife would be great but not unmanageable. Such a fiscally-based decision would make it essential that the state and the affected communities develop and implement regulatory policies to allocate a scarce commodity--parking spaces at Alewife--such that transportation objectives would be achieved in the most consistent manner possible. Such regulatory policies, which would require examination over the next several years, include a "first-come-first-serve" policy as well as:

Increases in parking charges at Alewife significantly higher than the 50 cents per day currently charged at the parking garage at Quincy Center Red Line station.

Reservation of certain sections of the garage for off-peak use.

Regulation of admittance to the garage i. e., during the morning peak hour first admitting those automobiles containing two or more persons.

Development of expanded feeder bus service.

Combinations of the above, and development of other viable options.

Draft Capital Improvement Grant Application

Text

All of these options would have to be considered to some extent if the Red Line is initially extended to Alewife. Therefore, further study of these options is needed regardless of the final decision on an interim terminal.

2. Arlington Heights Terminal

A Red Line terminal at Arlington Heights would attract 5,600 more riders per day than a terminal at Alewife. This would include 900 park-and-ride patrons at the two Arlington stations. About half of these would be patrons who would use Alewife if parking were available there and the rest would be patrons attracted to the new stations but not to Alewife. The remaining ridership would consist of 2,200 kiss-and-ride patrons and 2,500 walk-in and bus patrons, none of whom would use an Alewife station. There would be no decrease in the number of park-and-ride patrons at Alewife because potential demand there would still exceed the parking supply. About 50 percent of the patrons from Arlington who would take buses to Alewife if the rapid transit line ended there would walk either to Arlington Heights or Arlington Center if rapid transit is extended to Arlington Heights. However, an equal number of persons who would consider Alewife too far away by bus, would use bus service to Arlington Center or Arlington Heights; therefore, total bus ridership would not change. The Arlington stations would not attract walk-in patrons from outside of Arlington, but about 1,800 daily bus riders from various communities would transfer at Arlington Center or Arlington Heights instead of at Alewife.

The feasibility report for the Minuteman Area Transit Study has recently been published.

Recommended Action: The recommendations for further work west of the Arlington/Lexington line should be included.

3. Route 128 Terminal

The BTPR Study examined the option of extending Red Line rapid transit service to Route 128 in Lexington as part of the proposed project. Two factors have influenced the decision to define the proposed project in this application as extending only to Arlington Heights. First, ridership projections indicate that while the market area beyond Arlington is significant, it may not justify the expense of third rail rapid transit. Second, the Town of Lexington formally took the position that the issue of the optimal transit investment in the outer North-west Corridor should be investigated in a study completely devoted to the needs of that area.

The MBTA and the EOTC agreed with the necessity to take that area out of the corridor analysis and examine it in a separate study. The Lexington Area Transit Improvement Study is presently in the start-up phase. The study will review all data relative to the justification of a further Red Line extension in that area in addition to conducting a full analysis of the available alternatives. For these reasons, therefore, the proposed project description was established in terms of transit improvement to Arlington Heights.

Recommendations for further work west of the Arlington/Lexington line will be undertaken during the next phases of the Minuteman Area Transit Study and the pre-grant engineering phase for the Arlington Heights Station.

Draft Capital Improvement Grant Application

Text

Operating Costs

Annual operating and maintenance costs for rapid transit service to Arlington Heights would be approximately \$2.5 million more than for rapid transit service to Alewife. Assuming an adult fare of 50 cents at Arlington Center, Arlington Heights and Alewife, approximately \$1.6 million in additional revenue would be collected per year; this would amount to 64 percent of the incremental cost, twice the revenue-to-cost ratio for existing MBTA service. Additional revenues would be generated if a zonal fare system were adopted. Changes in costs for bus operations have not been included here since decreases in operating miles to existing service areas are usually offset to some degree by increases in operating miles to new service areas. The increase in user benefits for extension of rapid transit service from Alewife to Arlington Heights would not be as dramatic as the initial increase from Harvard Square to Alewife, but it would be approximately equal to the increase in operating and maintenance costs.

Summary

Extension of Red Line service beyond Alewife is desirable in terms of maximizing absolute levels of user benefits, conformance with local land development goals and objectives, maximizing ridership, and decreasing reliance on Alewife for the automobile (park-and-ride or kiss-and-ride) access to the Red Line. Although extension of the project beyond Alewife would not afford cost/benefit characteristics as positive as the initial Harvard Square to Alewife section, it does represent a desirable element of the total project as defined by the northwest planning process and is supported by a broadly-based local consensus.

The preceding discussed the costs and benefits of extending rapid transit service from Alewife to Arlington Heights along the Lexington Branch Right-of-Way. This same alignment, however, could be used by several alternative modes, specifically: commuter rail, light rail, and bus on exclusive busway. All three of these modes could provide feeder service to Red Line extension with a terminal at Alewife. The commuter rail option could also provide service to North Station as currently provided by the single daily train on the line.

1. Commuter Rail Service Beyond an Alewife Terminal

The commuter rail option appears at first to be an attractive means of providing service with the use of an existing facility.

Improvements to Boston and Maine Lexington Branch service would include provision of transfer stations at Alewife and Porter Square and would require cooperation with the railroad in the scheduling of freight trains. Fitchburg Division trains would interface only at the Porter Square Station.

The final report of the Boston Transportation Planning Review, the Environmental Impact Statement, and this draft application provide no clear analysis of the statements in this paragraph. Citizens and town officials have asked repeatedly for the relationship between the cost of providing bus service and the cost of operating the Red Line Extension.

Recommended Action: Provide information assessing the cost implications stated in this paragraph.

The project assessment increases for providing an expanded feeder bus network with the Red Line Extension are given in Table II-20 of the Final EIS. Projected costs for operation of the Red Line Extension are given in this paragraph.

Draft Capital Improvement Grant Application

Text

There are many constraints to the institution of even hourly rail service, however. Passenger stations and facilities are inadequate. The present rail line is single track and is in deteriorating condition; it is unsignalized over its entire length. The line crosses seven streets at grade between Alewife and Arlington Heights and nine streets between Arlington Heights and Route 128. Due to lack of adequate crossing protection devices, Boston and Maine operating rules require the trains to come to a full stop at five crossings in Arlington and five crossings in Lexington, and to approach all other crossings at reduced speed, prepared to stop.

Two alternatives for improving existing commuter rail service on the Lexington Branch beyond Alewife Brook were evaluated by the BTPR:

- Expansion of the existing Boston and Maine RDC service to provide adequate peak-hour service, and at least hourly service during off-peak periods, between Arlington Heights and North Station.
- Institution of Light Rail Vehicle (LRV) service between Alewife and Arlington Heights.

Each alternative would retain existing rail freight service and require the following basic features:

- Construction of a second main track between Alewife and Arlington Heights complete with crossovers and freight sidings.
- New rails, ties and ballast.
- Signalization of both tracks.
- Station, platform and shelter improvements.
- Installation of flasher lights and crossing gates at all proposed grade crossings.

Security fencing on each side of the right-of-way due to the frequent operation of trains on the Lexington Branch.

Maintenance of service to New England Farms and Brigham's near Arlington Center would require at-grade freight service in the area of Arlington Center.

At-grade freight service in the area of Arlington Center is unacceptable.

Recommended Action: Delete that alternative as an option.

All alternatives were considered for comparison purposes. The Authority does not recommend this alternative as an option.

Draft Capital Improvement Grant Application

Text

4. Access

Extension of the Red Line would afford improved access to the core area. Intraregional travel between intermediate stations would also be enhanced by the improved service.

Based on CTPS demand estimates, the number of new transit users on the Red Line Extension could total 22,100 riders per day (47 percent of the estimated project ridership). Of these riders, 10,550 would be diverted auto users. The remaining 11,450 persons are those who would not travel if the Red Line is not extended. These persons reside in the Northwest Subregion and would benefit from improved access to Boston and Cambridge with a Red Line Extension. Table C-10 shows a breakdown of new transit users by Red Line Station.

An additional access improvement would be the provision of a feasible transit alternative for the reverse commuter--the commuter who travels away from the core in the morning and toward the core in the evening. Due to the nature of peak-period bus operation, the existing transit system is based toward core-bound commuters. With a rapid transit system, however, the availability of transit service for persons traveling in the opposite direction of the major travel flow would be increased. Although reverse trips do not comprise a large portion of the peak travel volume, such trips are presently limited to the auto mode.

5. Mobility

New rapid transit service would increase the travel opportunities for limited-mobility persons in the Northwest Subregion. A low cost, convenient, and fast public transit alternative would provide improved access to core area opportunities for the auto-deficient, economically disadvantaged, and non-driving persons. Additionally, the inclusion of passenger amenities such as elevators and ramps, would increase travel opportunities for the elderly and physically handicapped.

P. Operator Benefits

If the Red Line is extended, the benefits experienced by the MBTA would be mainly operational in nature. Such benefits would permit more efficient use of transit resources and would include: lower long-term operating costs, more efficient use of the bus fleet, and improved terminal facilities.

1. Lower Long-Term Costs

Although the Red Line Extension project would require an extensive capital investment, over the long run it would be less expensive than bus transit for the level of service that would be provided. The capital-intensive nature of a Red Line Extension would require a large initial investment which would be repaid over time. However, the expansion of bus service--which is highly labor-intensive--to provide a comparable level of service would involve not only a sig-

The town has been unable to obtain supporting documentation that would substantiate this statement.

Recommended Action: Provide the additional analysis necessary to support this statement.

Back up data used in the calculations and projections of operating costs for the different alternatives are on file at the offices of the Central Transportation Planning Staff. This information is available for public review at that office.

Draft Capital Improvement Grant Application

See Comment on preceding page.

nificant amount of initial capital outlay but also continually increasing and extensive labor related expenses. Over the life of the project, this service would prove more expensive than the rapid transit option, which would entail only a minimal labor expense.

2. Efficient Bus Use

Extension of the Red Line would reduce the number of buses required for long haul service between the Northwest Subregion, Cambridge, and downtown Boston. These buses would then be available to provide more efficient feeder service for improved access to the rapid transit line. In addition to complementing rapid transit service, the expanded feeder network would improve the overall quality of local transit service between points not served by the Red Line and would increase the bus accessibility of intraregional trip attractors.

3. Terminal Facilities

Locating a new Red Line terminal in the Northwest Subregion would afford the MBTA an opportunity to construct a facility utilizing current state-of-the-art technology, equipment and design standards that would result in more efficient terminal operations. Incorporating plans for optimum user access and circulation conditions, including vehicular access capacity, external vehicular circulation and external/internal pedestrian flows, in the terminal station design would be an additional benefit of a new Red Line terminal.

C. Regional Benefits

The Red Line Extension would create areawide benefits that would be shared by all residents of the Northwest Subregion including: reduced vehicular volumes on major arterials and streets in the area; and, improved access to commercial, employment, and institutional facilities in the Northwest Subregion.

1. Vehicular Demand

New rapid transit service in the Northwest Subregion would afford a sufficiently attractive public transit alternative that would permit a significant number of automobile trips to be diverted to transit.

Text Draft Capital Improvement Grant Application

The extension of the Red Line to Arlington Heights, as a major extension of the basic system, is fully consistent with the transit program for the Boston metropolitan area. It provides a stimulus for development in the older urban areas of Porter Square, Cambridge, and Davis Square, Somerville. It provides substantially improved service to the transit-dependent areas of Cambridge, Somerville and Arlington, and provides new service to the other Northwestern suburbs. In addition, it provides an environmentally acceptable transportation service which will reduce the need for a major new expressway in this corridor. Finally, the proposed project is fully justified regardless of the final implementation of other elements of the program, since it provides a fully operable service each phase of which provides totally usable segments.

It is the policy of the Authority to provide extensive feeder bus service into all existing and new rapid transit lines. Express bus operations are provided where they complement grade separated rapid transit service (i.e., Massachusetts Turnpike service and Route I-93 service). The map provided as part of Exhibit N of the Authority's rapid transit and bus service demonstrates this coordination.

The Environmental Impact Analysis Report which is an attachment to this application shows a detailed proposal for routing of existing and new bus service into stations on the proposed extension of the Red Line to Arlington. Figures IV-5 through IV-8 show these proposed bus services. In addition, each station includes provisions for bus drop-off and pick-up. The Harvard Square station will provide direct access from buses in the exclusive bus tunnel to the rapid transit platform. The Davis, Alewife, Arlington Center and Arlington Heights stations will provide bus drop-off and pick-up areas separated from regular street traffic, with direct access to the rapid transit station; while the Porter Square station will allow access from regular street-side bus stops.

The systems requirements (both Capital and operating) at present and for the next five years are indicated in the Transit Development Program on pages 18, 70-73 and in Exhibit D-Project Financing.

There is a workable program in the metropolitan plan for the implementation of related transportation elements (projects) other than that proposed for funding herein. Specifically the following projects which are to a certain extent somewhat reliant or supportive of this proposed project are already in final capital application format and awaiting funding by UMTA:

It is the position of the Town of Arlington that a careful analysis must be undertaken of the feeder bus network as it relates to the proposed Red Line Extension. The town has yet to see a reasonable analysis of the alternatives. The EIS provides a cursory analysis of a proposed feeder bus network. The Town of Arlington does not accept this.

Recommended Action: Provide a detailed analysis of the proposed feeder bus network for the periods between the commencement of construction and opening day.

This information is contained in Chapter II of the Final EIS. See Page II-50 and Figures II-18 and II-19.

Text
Draft Capital Improvement Grant Application

The EIS does not include Scannell Field as a property to be acquired nor does it include a 4f analysis.

Recommended Action: Determine whether Scannell Field is to be taken and correct this document and EIS accordingly.

It is unclear in the EIS whether or not Mystic Street and portions of Massachusetts Avenue must be acquired as part of this project.

Recommended Action: Check all tables and text relating to property acquisition and relate to current plans to determine precisely which parcels must be acquired.

Right-of-way requirements have been updated to reflect the latest proposals.

Proposed Property Owner	Block and Lot No.	Type	Total Area	Taking
Mrs. John W. Powers 515 Pindge Avenue	269-1/2 #80	Private Commercial	15,830	TT
Mrs. John W. Powers 125 Alewife Brook Parkway	269-1/2 #82	Private Commercial	17,775	TT
John W. Powers 133 Alewife Brook Parkway	269-1/2 #83	Private Industrial	17,250	TT
John W. Powers 137 Alewife Brook Parkway	269-1/2 #84	Private Commercial	14,840	TT
Boston & Maine Railroad	-	Pvt. Utility	-	TT
Alewife to Arlington Center				
Town of Arlington Lake St. Parking Lot	7E-14	Public	15,812	PT
Town Of Arlington Scannell Field	9D-1	Public-Park	87,194	PT
Edward L. Schoenberg Hamilton Road Private Way	20B-5	Residential	32,017	PT
Boston & Maine Railroad	-	Pvt. Utility	-	TT
Arlington Center Station Complex				
George W. and Lillian Collins, 8 Swan Place	11D-21	Residential	5,655	TT
Gloria M. Osterer 590 Massachusetts Avenue	11E-(6A-7A)	Residential	14,582	PE
Arlington Five Cents Savings, 602-606 Mass. Ave.	11B-4	Commercial	3,930	PE
Town Of Arlington Mystic Street	45D-4B	Public	66,265	TT
Massachusetts Avenue	50H-2	Public	9,665	PE
Massachusetts Avenue	50H-H2	Public	999	PE
Massachusetts Avenue	50H-H1B	Public	13,300	TT
Loria Y. Osterer (Burton L. Williams Trs.) 5201 Place & Mass. Avenue	11B-8A	Commercial	1,179	TT
For Realty Co. "Park terrace"	45D-8B	Residential	19,930	TT

K-8

13-27 Mystic Street

ARLINGTON CONSERVATION COMMISSION
ROBBINS HOUSE
ARLINGTON, MASSACHUSETTS 02174

FILE

1/27/77

January 24, 1977

*Certified Mail
Return Receipt Requested*

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

RECEIVED

JAN 31 1977

UCA-30

Re: Draft Environmental Impact Statement, Red Line Extension
Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008

Dear Mr. Benjamin:

(1) The Arlington Conservation Commission wishes to submit the following comments on the Draft Environmental Impact Statement (DEIS) distributed by your office in the above matter.

(2) The Conservation Commission functions under Mass. G.L. Ch. 40, Sec. 8C and was established in Arlington by vote of the Town Meeting in 1966. As acknowledged in the DEIS (II-150, VI-31), the Commission has regulatory powers under the Wetlands Protection Act, Mass. G.L. Ch. 131, Sec. 40, and the Inland Wetlands Act, Mass. G.L. Ch. 131, Sec. 40A. Copies of these Statutes are attached to this letter.

(3) General Comments:

1. The Commission feels that there is a lack of precision in the document (VI-11 refers to Fig. VI-7 when it should be Fig. VI-8); there seems to be no intelligent discussion of alternatives and no complete discussion of the road system believed to be necessary to feed the Alewife station and which will impact the wetlands (VI-24, VI-35, VI-37, VI-42, ...); and it is very difficult to assimilate information on any given point because of the diffusion of this information throughout the DEIS (references to old ADL development plan on VI-32 and VI-37 could have been one reference).

2. The extension of the Red Line along its presently proposed route presents serious environmental problems. The entire route from the Alewife station to Spy Pond Field, located just south of Arlington Center, runs through land which has a very high water table. Storm runoff from four communities, Cambridge, Arlington, Belmont and Watertown, enters the Alewife watershed (VI-74). According to Belmont officials, 70% of Belmont's runoff is absorbed by this area. A section of the track running through Arlington will be in the designated floodplain; any encroachment could cause serious flooding problems all along the Alewife Brook section of East Arlington. Also, the DEIS (II-148) refers to possible flash flooding during construction which could cause problems in the drainage system.

An underground turnback and storage track is planned for land located in East Arlington (VII-9, 16). This area includes Thorndike Field, a multi-use play facility and a major open space in the town. The DEIS does not indicate just how much of the field might be disrupted during construction or for how long, nor does it suggest an alternative area for the sporting events that usually take place there. Also, the DEIS states that "depth and characteristics of the groundwater table..." and "the likelihood of a high water table... will suggest construction methods (VII-9). Techniques for construction of tunnels allowing the free flow of ground water and storm runoff are described but, no complete soils analysis has been done (II-87, II-148, II-151), therefore, the techniques to be used cannot be determined at this time. The soil is admittedly poor (VI-28,29). This lack of complete, and what the Commission considers to be necessary, information is very evident in the DEIS.

3. The DEIS states that 'the water table at Spy Pond may be so high there will be trouble waterproofing (the tunnel) (VII-3). The land along Spy Pond to be impacted by the Red Line extension includes a picnic, parking and play area which includes 'intensive neighborhood patronage...' (II-125). It also includes a Little League ball field, heavily used during the baseball season. This park area provides the only really accessible public access to Spy Pond, "which increases its importance" (II-125). The Conservation Commission is very concerned about disruption to this area and any possible long-term negative effects brought about by construction work, such as the removal of valuable trees and shrubbery and loss of playing areas. It is felt that vegetation lost in any of the impacted areas along the line should be replaced with similar or higher quality plantings. The Commission feels that the funding for this type of restoration and any funding needed for the construction of a linear park along the MBTA right-of-way should be addressed in the Final EIS.

4. The Metropolitan District Commission (MDC) land known as the Alewife Reservation contains a unique wildlife habitat (VI-66). The DEIS states that "There is very little well-documented information dealing with the effects of noise on wildlife..." (App. D-6,7) and wildlife disrupted by the project can find "...similar habitats elsewhere in the wetlands... (emphasis in EIS, VI-86)." The Commission feels these observations show a serious lack of sensitivity. There is no similar habitat and, since the effects of noise impacts on wildlife have not as yet been measured (D-6,7), the Commission feels that there is a distinct possibility that birds such as the Osprey (not listed in the DEIS list of birds on VI-84 or in App. C-2) may disappear permanently from the area.

5. No complete hydrology study has been undertaken to date for the Alewife area. The MDC is currently in the process of selecting a firm to do a hydrology study of the entire Mystic River Basin watershed area, which includes the Alewife watershed. This study is being undertaken with the cooperation of local communities and the Army Corps of Engineers. The study will take an estimated one to two years and, consequently, it is impossible to assess fully the impact of construction in this area on the flood plain until the results of this study are presented.

The Spy Pond flood plain has not been established and the possibility of raising the water level as a result of the construction of the Red Line is not addressed in the "Probable Impacts from the Project" (VII-67). The hydrology study of the MDC is expected to include Spy Pond and, therefore, in the absence of information in the DEIS regarding flooding at Spy Pond, the Commission must await the results of the hydrology study of the MDC before commenting further on this issue.

6. The changes in alignment of the track at Alewife and the discarding of the parking garage in Arlington Center are not carefully addressed in the DEIS. Also, the conflict in the position of the Town of Arlington and the MBTA concerning an underground vs. depressed line (VIII-11) remain unresolved in the DEIS. The Conservation Commission supports the underground alignment because of the possibility of providing open space in the form of a linear park along the top of the right-of-way. As indicated in comment (3), the Commission feels the funding of this linear park should be dealt with in the Final EIS.

7. Plans for a transit station at Arlington Heights as described in Chapter VIII are "preliminary and subject to further analysis and development to assure consistency with the results of the ongoing Minuteman Area Transit Improvement Study"(MATS)(VIII-1). A summary of this study has become available only in the last few days. There has been insufficient time to review the summary and, as of this date, there has been no public presentation of the information contained in the report. Therefore, it is not possible to make reasonable judgments on the alignment and location of a station at Arlington Heights which is subject to change as a result of the MATS recommendations.

8. The Conservation Commission is pleased to see that the MBTA recognizes the policy of the Commission and that no additional culverts will be introduced along Mill Brook (VIII-33). The granite arch culvert opening that presently exists near Mill Street will be preserved during and after construction of the Red Line extension (VIII-33). The Commission wishes to point out its concern that no work undertaken on the Red Line extension should preclude the development of a linear park along Mill Brook. This linear park is part of an ongoing project in the Town and is not to be confused with the linear park along the Red Line extension which will primarily serve pedestrians and bicyclists. The Mill Brook Linear Park is expected to include aesthetic improvements together with some commercial and residential development. The Commission feels this type of development will benefit the town both economically and environmentally. Proper maintenance of Mill Brook is also considered to be necessary for flood control purposes. The "Mill Brook Hydrological Flood

Jan. 24, 1977

Plain Study for the Town of Arlington", 1974 done by C. E. Maguire, Inc. points to Cooke's Hollow, the beginning link in the Mill Brook Linear Park, as a model for control of flooding. This report is referred to in the DEIS at App. B-2.

9. In a letter cited in the DEIS at II-138, Maurice Robbins, Ph.D., State Archaeologist indicates that there are "no archaeological sites of record" in the Harvard Square area involved in the Red Line extension. The Arlington Conservation Commission requests an evaluation of possible archaeological sites all along the extension. However, it is felt that the possibility of finding such sites in the future may be a reality and that the final DEIS should present information as to the preservation of any artifacts uncovered during the digging along the right-of-way.

10. Impacts on the Town of Arlington using Alewife, Arlington Center, or Arlington Heights as a terminus have not been thoroughly investigated. The Conservation Commission feels this type of investigation should have been presented in the DEIS. Further, if a terminal is acceptable to East Lexington, the possible impacts to the Great Meadows (land in Lexington owned by Arlington) and/or the Arlington Reservoir (a town facility used for bathing and recreation in the summer) could be severe. Since the possibility of a terminal in East Lexington has been proposed, the Commission feels that the impacts of such a terminal need to be explored.

In conclusion, the Arlington Conservation Commission feels that the MBTA should be required to provide more detailed information regarding the Arlington portion of the Red Line Extension before the Urban Mass Transportation Administration accepts the Draft Environmental Impact Statement as final.

Sincerely,

Robert R. Bryant

Robert R. Bryant, Chairman
Arlington Conservation Commission

B/f

payment of indebtedness, if any, incurred in acquiring land for such conservation project.

12.05 AN ACT RELATIVE TO THE PROTECTION OF WETLANDS (G.L. Ch 131, Sec. 40)

No person shall remove, fill, dredge or alter any bank, beach, dune, flat, marsh, meadow or swamp bordering on the ocean or on any estuary, creek, river, stream, pond or lake, or any land under said waters or any land subject to tidal action, coastal storm flowage, or flooding without filing written notice of his intention to so remove, fill, dredge or alter, including such plans as may be necessary to describe such proposed activity and its effect on the environment, at least sixty days prior to any such removing, filling, dredging or altering. Said notice shall be sent by certified mail to the conservation commission or, if none to the board of selectmen in a town or the mayor of a city in which the land upon which such activity is proposed is located. Each such notice shall be accompanied by a filing fee of twenty-five dollars payable to the city or town. Copies of such notice shall be sent at the same time by certified mail to the state departments of natural resources and public works. No such notice shall be sent before all permits, variances and approvals required by local bylaw with respect to the proposed activity have been obtained. Upon receipt of any notice hereunder the department of natural resources shall designate a file number for such notice and shall send a notification of such number to the person giving notice, to the conservation commission, selectmen or mayor to whom the notice was given, and to the department of public works. Said notification shall state the name of the owner of the land upon which the proposed work is to be done and the location of said land.

The term "person" as used in this section shall include any individual, group of individuals, association, partnership, corporation, company, business organization, trust, estate, the commonwealth or political subdivision thereof, administrative agency, public or quasi-public corporation or body, or any other legal entity or its legal representative, agents or assigns.

The term "applicant" as used in this section shall mean the person giving notice of intention to remove, fill, dredge or alter.

The conservation commission, selectmen or mayor receiving notice under this section shall hold a public hearing on the proposed activity within twenty-one days of the receipt of said

notice. Notice of the time and place of said hearing shall be given by the hearing authority at the expense of the applicant, not less than five days prior to such hearing, by publication in a newspaper of general circulation in the city or town where the activity is proposed and by mailing a notice to the applicant and to the board of health and the planning board of said city or town and to the state departments of natural resources and public works.

If after said hearing the conservation commission, selectmen or mayor, as the case may be, determine that the area on which the proposed work is to be done is significant to public or private water supply, to the ground water supply, to flood control, to storm damage prevention, to prevention of pollution, to protection of land containing shellfish, or to the protection of fisheries, such conservation commission, board of selectmen or mayor shall by written order within twenty-one days of such hearing impose such conditions as will contribute to the protection of the interests described herein, and all work shall be done in accordance therewith. Such order shall be signed by the mayor or a majority of the conservation commission or board of selectmen, as the case may be, and a copy thereof shall be sent forthwith to the applicant and to the department of natural resources and the department of public works. Notwithstanding such order, no work shall be done until sixty days after the filing of the notice of intention required by this section.

Not more than twenty-eight days after a hearing under the provisions of this section, any person aggrieved by an order issued after such hearing, or any owner of land abutting the land upon which the proposed work is to be done, or any ten residents of the city or town where such land is located may by certified mail require the department of natural resources to determine whether the area on which the proposed work is to be done is significant to public or private water supply, to the ground water supply, to flood control, to storm damage prevention, to prevention of pollution, to protection of land containing shellfish or to the protection of fisheries. The commissioner of natural resources also may request such a determination within said twenty-eight days. The party making any such request shall at the same time send a copy thereof by certified mail to the conservation commission, board of selectmen or mayor which conducted the hearing hereunder. If such party is other than the applicant, a copy of such request

request the department of natural resources shall make the determination requested and shall by written order, signed by the commissioner of natural resources, impose such conditions as will contribute to the protection of the interests described herein. Such order shall supercede the prior order of the conservation commission, board of selectmen or mayor, and all work shall be done in accordance therewith. A copy of such order shall be sent to the applicant, to the conservation commission, board of selectmen or mayor which conducted the hearing hereunder, and to the department of public works.

Any person aggrieved by an order of the department of natural resources issued under the provisions of this section may appeal under the provisions of chapter thirty A. Such right of appeal shall be exclusive.

No work proposed in any notice of intention shall be undertaken until the final order with respect to such work has been recorded in the registry of deeds for the district in which the land is located.

Any site where work is being done which is subject to this section shall display a sign of not less than two square feet or more than three square feet bearing the words: "Massachusetts Department of Natural Resources File Number", and the sign shall display the file number assigned to the project.

If the department of public works finds that any proposed work would violate the provisions of chapter ninety-one, it shall proceed immediately to enforce the provisions of said chapter.

The provisions of this section shall not apply to the following: any mosquito control work done under the provisions of clause (36) of section five of chapter forty, chapter two hundred and fifty-two, or under the provisions of a special act; or work performed for agricultural purposes. The commissioner may adopt rules and regulations consistent with the purposes of this section.

Any person who purchases, inherits or otherwise acquires real estate upon which work has been done in violation of the provisions of this section or in violation of any order issued under this section shall forthwith comply with any such order or restore such real estate to its condition prior to any such violation. Any court having equity jurisdiction may restrain a violation of this section and enter such orders as it deems necessary to remedy such violation, upon the petition of the attorney general, the

commissioner of natural resources, a city or town, an owner or occupant of property which may be affected by said removal, filling, dredging or altering, or ten residents of the commonwealth under the provisions of section ten A of chapter two hundred and fourteen.

Whoever violates any provision of this section shall be punished by a fine of not more than one hundred dollars or by imprisonment for not more than six months or both. This section may be enforced by natural resources officers.

SECTION 2. Section twenty-seven A of chapter one hundred and thirty of the General Laws is hereby repealed (Jones Act).

SECTION 3. All orders issued under the authority of section twenty-seven A of chapter one hundred and thirty of the general Laws prior to the effective date of this act shall remain in full force and effect until amended or repealed by the commissioner of natural resources.

SECTION 4. The department of natural resources is hereby authorized and directed to map the commonwealth so as to make available to municipalities the delineation of wetlands within their boundaries.

12.06 COASTAL WETLANDS ACT, G.L. Ch 130, Sec. 105)

The commissioner, with the approval of the board of natural resources, may from time to time, for the purpose of promoting the public safety, health and welfare, and protecting public and private property, wildlife and marine fisheries, adopt, amend, modify or repeal orders regulating, restricting or prohibiting dredging, filling, removing or otherwise altering, or polluting, coastal wetlands. In this section, the term "coastal wetlands" shall mean any bank, marsh, swamp, meadow, flat or other low land subject to tidal action or coastal storm flowage and such contiguous land as the commissioner reasonably deems necessary to affect by any such order in carrying out the purposes of this section.

The commissioner shall, before adopting, amending, modifying or repealing any such order, hold a public hearing thereon in the municipality in which the coastal wetlands to be affected are located, giving notice thereof to the state reclamation board, the department of public works and each assessed owner of such wetlands by mail at least twenty-one days prior thereto.

Upon the adoption of any such order or any order amending, modifying or repealing the

same, the commissioner shall cause a copy thereof, together with a plan of the lands affected and a list of the assessed owners of such lands, to be recorded in the proper registry of deeds or, if such lands are registered, in the registry district of the land court, and shall mail a copy of such order and plan to each assessed owner of such lands affected thereby. Such orders shall not be subject to the provisions of chapter one hundred and eighty-four. Any person who violates any such order shall be punished by a fine of not less than ten nor more than fifty dollars, or by imprisonment for not more than one month, or by both such fine and imprisonment.

The superior court shall have jurisdiction in equity to restrain violations of such orders.

Any person having a recorded interest in land affected by any such order, may, within ninety days after receiving notice thereof, petition the superior court to determine whether such order so restricts the use of his property as to deprive him of the practical uses thereof and is therefore, an unreasonable exercise of the police power because the order constitutes the equivalent of a taking without compensation. If the court finds the order to be unreasonable exercise of the police power, as aforesaid, the court shall enter a finding that such order shall not apply to the land of the petitioner; provided, however, that such finding shall not affect any other land than that of the petitioner. The Commissioner shall cause a copy of such finding to be recorded forthwith in the proper registry of deeds or, if the land is registered, in registry district of the land court. The method provided in this paragraph for the determination of the issue of whether any such order constitutes a taking without compensation shall be exclusive, and such issue shall not be determined in any other proceeding, nor shall any person have a right to petition for the assessment of damages under chapter seventy-nine by reason of the adoption of any such order.

The department may, after a finding has been entered that such order shall not apply to certain land as provided in the preceding paragraph, take the fee or any lesser interest in such land in the name of the commonwealth by eminent domain under the provisions of chapter seventy-nine and hold the same for the purposes set forth in this section.

No action by the commissioner or the department under this section shall prohibit, restrict, or impair the exercise or performance of the powers and duties conferred or imposed by

law on the department of public works, the state reclamation board or any mosquito control or other project operating under or authorized by chapter two hundred and fifty-two.

No order adopted hereunder shall apply to any area under the control of the metropolitan district commission.

Expenses incidental to adopting and recording orders, and awards of damages for lands taken by eminent domain, under section one hundred and five of chapter one hundred and thirty of the General Laws, as appearing in section one of this act, may be paid out of funds made available under the provisions of chapter five hundred and seven of the acts of nineteen hundred and sixty-four for carrying out the provisions of section three of chapter one hundred and thirty-two A of the General Laws.

12.07 INLAND WETLANDS ACT (G.L. Ch 131, Sec. 40A)

The commissioner of natural resources, with the approval of the board of natural resources shall from time to time, for the purposes of preserving and promoting the public safety, private property, wildlife, fisheries, water resources, flood plain areas and agriculture, adopt, amend or repeal orders regulating, restricting or prohibiting dredging, filling, removing or otherwise altering or polluting inland wetlands. In this section the term "inland wetlands" shall mean any marsh, meadow or swamp bordering on inland waters or that portion of any bank which touches any inland waters, or any marsh, meadow or swamp subject to flooding by fresh water.

The commissioner shall protect flood plain areas by establishing by order that, along any waterway or flood-prone area lines beyond which in the direction of the waterway or flood-prone area, no obstruction or encroachment shall be placed by any person, firm or corporation, public or private, unless authorized by the commissioner. The commissioner, in establishing such encroachment lines shall base their location on the boundaries of the area which have been mapped, designated and recorded as inland wetlands in accordance with the provisions of this section.

The commissioner shall, before adopting any such order under the preceding paragraphs, hold a public hearing thereon in the city or town or watershed region in which the inland wetlands or flood plains to be affected are located, giving notice thereof to the state reclamation board,

the department of public works, the department of public health, the metropolitan district commission, the selectmen, conservation commissioners and assessors of each such city or town, and each assessed owner of such wetland or flood plains by certified mail at least twenty-one days prior thereto. For the purposes of this section the person to whom the land was assessed in the last preceding annual tax levy shall be deemed to be the assessed owner thereof, and the notice shall be addressed in the same manner as the notice of such tax levy, unless a different owner or a different address is known by the commissioner to be the correct one in which case the notice shall be so addressed. No order shall be adopted until it is approved by the selectmen or city council of the town or city in which said wetlands or flood plains are located; provided, that if the selectmen or the city council fail to approve or disapprove in writing, stating reasons for such disapproval, such proposed order within thirty days after receipt of a written request from the commissioner such order shall be deemed to have been approved, and provided, further, if such order is so disapproved the commissioner may, after expiration of six months from the date of such disapproval and after due consideration of the reasons for such disapproval, adopt such order or amended order.

Upon the adoption of any such order or any order amending or repealing the same, the commissioner shall cause a copy thereof, together with a plan of the lands affected and a list of the assessed owners of such lands, to be recorded in the registry of deeds or the office of the assistant recorder for the district wherein the land lies, and shall send by certified mail a copy of such order and plan to each assessed owner of land affected and to the clerk and board of assessors of each city or town in which the land is located. Such order shall not be subject to the provisions of chapter one hundred and eighty-four. The superior court shall have jurisdiction in equity to enforce, and remedy violations of such orders.

Any person having an interest in land affected by any such order, may within ninety days after receiving notice thereof, petition the superior court in equity to determine whether such order so restricts the use of his property as to deprive him of the practical uses thereof and is therefore an unreasonable exercise of the police power because the order constitutes the equivalent of a taking without compensation. If the court finds the order to be an unreasonable exercise of the

police power, as aforesaid, the court shall enter a finding that such order shall not apply to the land of the petitioner; provided, however that such finding shall not affect any other land than that of the petitioner. The commissioner shall cause a copy of such finding to be recorded forthwith in the proper registry of deeds or, if the land is registered, in the registry district of the land court. The method provided in this paragraph for the determination of the issue of whether any such order constitutes a taking without compensation shall be exclusive, and such issue shall not be determined in any other proceeding, nor shall any person have a right to petition for the assessment of damages under chapter seventy-nine by reason of the adoption of any such order.

The department may, after a finding has been entered that such order shall not apply to certain land as provided in the preceding paragraph, take the fee or any lesser interest in such land in the name of the commonwealth by eminent domain under the provisions of chapter seventy-nine and hold the same for the purposes set forth in this section. No such order shall prohibit, restrict or regulate the use or improvement of land or water for agricultural purposes without the written consent of the owner, provided, however, that any subsequent nonagricultural use of land which was filled or drained for agricultural purposes at a time when said land was subject to an order under this section may be regulated, restricted or prohibited by such order. No such order shall prohibit, restrict or regulate the exercise or performance of the powers and duties conferred or imposed by law upon the department of public health, the department of public works, the metropolitan district commission, the division of fisheries and game, the Massachusetts aeronautics commission, or the state reclamation board, or any mosquito control or other project operating under or authorized by chapter two hundred and fifty-two. If after following the procedure hereinbefore set forth, no such order has become effective as to any particular land or interest therein, the department may, subject to a specific appropriation for the purpose, take such land or interest therein by eminent domain, or may acquire the same by purchase, gift or otherwise. Awards of damages, expenses of acquisition of land and water, and expenses incidental thereto and to the preparation of maps and plans of the lands to be affected, to the holding of hearings, and to the adoption and recording of orders, as provided in this section,

may be paid out of funds made available for the purpose of section three of chapter one hundred and thirty-two A.

The exercise of the power of eminent domain under the provisions of this section shall be subject to the approval of the board of natural resources, the governor and the executive council.

12.08 AN ACT ESTABLISHING A SYSTEM OF SCENIC AND RECREATIONAL RIVERS AND STREAMS IN THE COMMONWEALTH (G.L. Ch 21, Sec. 17B)

The commissioner, with the approval of the board of natural resources, may from time to time, for the purpose of promoting the public safety, health and welfare and protecting public and private property, wildlife, fresh water fisheries and irreplaceable wild, scenic and recreational river resources, adopt, amend, modify or repeal orders regulating, restricting or prohibiting dredging, filling, removing or otherwise altering, or polluting the scenic and recreational rivers and streams of the commonwealth. The notice required by section two of chapter thirty A as a condition precedent to the adoption or amendment of any regulation shall be given to each assessed owner of any land on the banks of any such river or stream. In this section, the term "scenic and recreational rivers and streams of the commonwealth" shall mean rivers and streams of the commonwealth or portions thereof, and such contiguous land not to exceed one hundred yards on either side of the natural bank of such river as the commissioner reasonably deems it necessary to protect by an such order.

Upon adoption of any such order or any order amending, modifying or appealing the same, the commissioner shall cause a copy thereof, together with a plan of the river or stream or portion thereof affected and a list of the assessed owners of such lands, to be recorded in the registry of deeds for the county wherein said river or stream is located and shall mail a copy of such order and plan to each assessed owner of such lands affected thereby. Such order shall not be subject to the provisions of chapter one hundred and eighty-four. Any person who violates any such order shall be punished by a fine of not less than ten dollars nor more than one hundred dollars, or by imprisonment for not more than six months, or both.

The superior court shall have jurisdiction in

equity to restrain violations of such orders.

Any person having a recorded interest in land affected by any such order may, within ninety days after receiving notice thereof, petition the superior court to determine whether such order unreasonably restricts the use of his property as to deprive him of the practical uses thereof and which constitutes an unreasonable exercise of the police power so as to become the equivalent of a taking without compensation. If the court finds the order to be unreasonable, the court shall enter a finding that such order shall not apply to the land of the petitioner; provided, however, that such finding shall not affect any other land than that of the petitioner. The commissioner shall cause a copy of such finding to be recorded forthwith in the proper registry of deeds or, if the land is registered, in the registry district of the land court. The method provided in this paragraph for the determination of the issue of whether any such order constitutes a taking without compensation shall be exclusive, and such issue shall not be determined in any other proceeding nor shall any person have a right to petition for the assessment, of damages under chapter seventy-nine by reason of the adoption of any such order.

The department may, after a finding has been entered that such order shall not apply to certain land as provided in the preceding paragraph, take the fee or any lesser interest in such land in the name of the commonwealth by eminent domain under the provisions of chapter seventy-nine and hold the same for the purposes set forth in this section.

No action by the commissioner or the department under this section shall prohibit, restrict or impair the exercise or performance of the powers and duties conferred or imposed by law on the department of public works, the state reclamation board or any mosquito control or other project operating under or authorized by chapter two hundred and fifty-two. No order adopted under the provisions of this section shall be deemed to invalidate any order imposed prior thereto by the department of natural resources pursuant to section twenty-seven A of chapter one hundred and thirty or of section forty, forty A or one hundred and five of chapter one hundred and thirty-one.

Costs incurred under this section including, but not limited to, the acquisition of lands or interests therein, awards of damages, surveying and mapping, the preparation of designation plans, printing of reports, conducting of public hearings and expenses incidental thereto may

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3.1

Reference to Figure VI-8 on Page VI-17 changed.

Alternatives were discussed and compared for each of the line and station segments. Included with this text are tables which show a summary comparison of alternatives. See Figures VI-6, III-13, and V-5 for examples. Alternatives to the project alignment and transportation mode are discussed in Chapter IX.

Additional text discussing the proposed roadway improvements at Alewife has been added to Chapter VI. This new information is preliminary material taken from a draft of the Updated Environmental Overview Summary for the proposed Route 2 Highway Improvements currently being prepared by MDPW. Additional information on the effects of new highway and station construction will be forthcoming from the recently initiated MDC Mystic River Watershed Study.

Information on the ADL Development Plan is given twice because of a previous request to also include material and information generated by the Alewife Land Use Subcommittee in Chapter VI.

These concerns will be addressed in detail by the MDC Mystic River Watershed Hydrology Study currently being prepared.

3.2

See pages VI-114, 115 and II-185. The flash flooding discussed on page II-187 involves the filling of the tunnel excavation with water due to some unforeseen circumstance and not with flooding of nearby areas.

See page VII-59 and Section 4(f) Statement for discussion of impacts to Thorndike Field.

Soils investigations are an expensive and time consuming process. It is accepted practice to develop soils data consistent with the level of design. On the Red Line Project, a very

ARLINGTON CONSERVATION COMMISSION, (Continued)

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Number

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3.2
(Cont.)

extensive soils exploration program is presently being undertaken between Harvard and Alewife. Similar type of programs will be done between Alewife and Arlington Heights. All data will be made available to the Arlington Conservation Commission and any other interested group.

3.3

No long term impacts to the Spy Pond Totlot would occur after constructing of the line segment abutting this facility. See the Section 4(f) Statement contained in Chapter II for a description of probable impacts and measures to minimize harm.

To the extent possible, the Authority will restore all areas disturbed during construction to their origin state. This will include replacement of all lost vegetation with similar or high quality plantings.

3.4

As stated, there is little well-documented information dealing with the effects of noise on wildlife. Species present in the wetlands are, however, presently subjected to noise from adjacent areas of industrial and transportation facilities and their continued existence in this area demonstrates their ability to tolerate noise levels exceeding natural conditions.

Osprey has been added to the list of wildlife contained in Appendix C.

ARLINGTON CONSERVATION COMMISSION, (Continued)

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3.5

We agree that the Commission must await the the results of the hydrology study of the MDC before commenting further on these issues. It is presently expected that early results from the MDC study will be available in the fall. Concurrently, in the pre-grant engineering phase, MBTA will be conducting a field soils exploration program, ground water observation and laboratory tests. These data will be available prior to the completion of the preliminary engineering phase.

3.6

All text concerning the Alewife project alignment and the Arlington Center Station has been reviewed and corrected to reflect latest policies and/or pre-grant engineering modifications to the Project.

The change in alignment at Alewife and its impacts are discussed in Chapter VI and in the Russell Field section of the Section 4(f) Statement contained in Chapter II.

The Project through Arlington is a completely underground tunnel/cut-and-cover.

3.7

A summary of the Minuteman Area Transportation Study has been added to Chapter VIII. This information, as well as additional information coming out of that study, will be used to modify or update planning and engineering for the Arlington Heights Station during the Pre-grant Engineering phase for the Arlington section of the project.

3.8

No additional culverts will be introduced along Mill Brook and no work undertaken on the Red Line Extension will preclude the development of a linear park along Mill Brook.

ARLINGTON CONSERVATION COMMISSION, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
3.9	The Authority is currently in the process of engaging a qualified archaeologist to survey the proposed Red Line corridor through Arlington.
3.10	The potential impacts of a terminal in East Lexington will be discussed in more detail during Phase II of the Minuteman Area Transportation Study. The impacts of a Project terminating at Arlington Center have not been discussed in detail because the official policy of the Town rules out this option.



TOWN OF BELMONT

ENGINEERING DEPARTMENT

TOWN HALL

BELMONT, MASS. 02178

RECEIVED

JAN 14 1977

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RICHARD B. BETTS
TOWN ENGINEER

January 11, 1976

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass. Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

Re: Comments on Draft Environmental Impact Statement
Red Line Extension, Harvard Square to Arlington Hts.
Boston, Massachusetts MA-23-9008

Dear Mr. Benjamin:

- [1] The Red Line Extension at Alewife is only one element in the proposed set of transportation/land use developments which this DEIS has addressed.
- [2] The design of the transit station, garage, tunnel and other facilities is closely related to the design of access roads and ramps along with the improvements of portions of Route 2 and the Alewife Brook Parkway. A full environmental review of both transit and roadway improvements should be coordinated to eliminate any major environmental damage.

Very truly yours,

Richard B. Betts

TOWN ENGINEER

RBB/o

TOWN OF BELMONT, January 11, 1977

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Response

2

A full environmental review of both transit and roadway improvements are being coordinated to eliminate any major environmental damage. The MBTA is working with the MDC and Mystic River Watershed Association to prepare a Hydrological Study for the Mystic River Watershed including the Alewife Brook Area. The MBTA is working with the City of Cambridge in their preparation of Economic, Urban Design and Traffic Studies for the Alewife area. The information generated by these studies has been used to help update the Environmental Impact Statement for the Red Line Extension. See page VI-30 and Appendix J and K.

LANNING BOARD

Y HALL SOMERVILLE, MASSACHUSETTS 02143
7) 625-6600

See 1/25/77
S. LESTER RALPH
MAYOR
FRANK A. SESTITO
PLANNING DIRECTOR

January 25, 1977

RECEIVED

JAN 28 1977

UCA-30

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, D.C. 20590

Re: Commentary on E.I.R. Red Line Extension,
Harvard Square to Arlington Heights

Dear Mr. Benjamin:

The City of Somerville again records itself in favor of the proposed extension and views this extension as a positive factor for the environmental and economic well being for the citizens of the City of Somerville.

The City of Somerville officials have taken part in all meetings of the Davis Square Task Force which is made up of all sectors of the Davis Square Community.

The city would reflect all of their concerns, which will be forth coming under separate cover, with special emphasis on the following:

1. That particular attention be paid to the construction phase with the purpose of minimizing problems especially dust and noise.
2. That the freight line, (Lexington and Arlington Branch) through Davis Square be eliminated. This would eliminate many traffic problems both pedestrian and vehicular, which would be compounded by the station location. This problem cannot be emphasized too much.
3. That land re-use problems be resolved to more definitive degree.
4. As an example of the work and the ongoing planning process, the pre grant engineering consultants have recommended:

Mr. Benjamin, Director

Page 2.

- a. A deep bore, which, while requiring the Porter Square Station be deep, would provide more benefits to the residents and businesses of Somerville.
- b. A change in the horizontal alignment of the tunnel at Grove Street which would reduce both pre and post construction impact on the businesses there.

We therefor recommend that this option be pursued further.

Very truly yours,

Frank A. Sestito

Frank A. Sestito
Planning Director

FAS/hp

SOMERVILLE PLANNING BOARD, January 25, 1977

Paragraph
Number

Response

3.1

The Authority is committed to a program of controlled construction operations aimed at minimizing short term construction impacts. These commitments, which have been established through coordination with local officials, are outlined in the Summary of Commitments (short term) included in the Summary Chapter of the Final Environmental Impact Statement.

3.2

The Project Calls for the elimination of the Freight Cutoff between Davis Square and Alewife.

3.3

The Authority will work with the City of Somerville and the Davis Square Task Force to plan for the re-use of land above the subway tunnel. Already the Joint Planning Program, sponsored by MBTA and MAPC, was begun dealing with this program with the initiation of an Urban Design and Economic Study for the Davis Square Area.



CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 876-6800

RECEIVED

EXECUTIVE DEPARTMENT
JAMES L. SULLIVAN
City Manager

January 10, 1977

JAN 14 1977

UCA-30

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass. Transportation Administration
Washington, D.C. 20590

RE: Draft EIS-Red Line (NW) Extension, Boston, Massachusetts
MA-23-9008

Dear Mr. Benjamin:

The City of Cambridge has long supported the MBTA's proposed Red Line Extension from Harvard Square in Cambridge eventually to Route 128 in Lexington. Enclosed are four City Council Resolutions outlining the City's continuing support for the project as well as conditions to that support. In addition I am enclosing a City Council resolution stating the City's position relative to roadway improvements in the Alewife area of Cambridge.

Although some people feel that the Alewife roadway improvement project should have been officially combined with transit planning activities for the Red Line station in the area, I feel that the close coordination which has taken place among the various agencies involved has allowed each project to proceed at its own pace without either project holding up the other. This is especially true when the different procedural requirements of the participating Federal agencies and the dissimilar project time spans are considered.

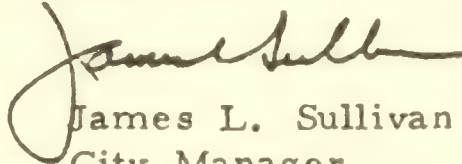
With specific regard to the Draft EIS for the Red Line extension from Harvard Square to Arlington Heights, I feel the document suitably covers the environmental impacts of concern to the City of Cambridge. Although in some instances the city disagrees with certain specific proposals outlined in the text, most of these issues have been addressed and rectified during the pre-grant engineering and design phase now underway. In fact some alternatives now being investigated, especially in the Porter Square area, differ considerably from those contained in the EIS. I hope that you will review these changes at the appropriate time with an open mind even though the final product may not conform to the letter of the EIS proposal.

January 10, 1977

We in the City of Cambridge view the process as a continuing effort with, hopefully, a great deal of flexibility so that the MBTA has the ability to react positively to issues as they arise during project design. The City and the MBTA have maintained over the last few years a very high level of cooperation and good will. I am confident that most disagreements can be addressed to the mutual satisfaction of both parties.

Throughout this study the MBTA has conducted an extremely open participatory process which has assured that any and all parties with an interest in the project have the opportunity to express their views. This process is continuing and, in our opinion, the MBTA has gone out of its way to incorporate the desires of all in the design of the project.

Sincerely,



James L. Sullivan
City Manager

JLS/pe

CITY OF CAMBRIDGE, JANUARY 10, 1977

Paragraph
Number

Response

All

No response necessary.

GROUP COMMENTS

DAVIS SQUARE TASK FORCE
58 DAY STREET
SOMERVILLE, MASS.

*See
encl. 1/25
see similarity
to Ward 6*

January 24, 1977

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

RECEIVED

JAN 28 1977

Dear Mr. Benjamin:

UCA-30

[1] The Davis Square Task Force, a group comprised of: The Ward Six Civic Association, the Davis Square Business Association, the Somerville Chamber of Commerce, the Somerville Planning Board and the Metropolitan Area Planning Council, has been working with the MBTA and its consultants on planning for the proposed transit facility in Davis Square for the past several years. The Task Force is attempting to monitor the work of the consultants in order to guide the city in its recommendations to the MBTA and to keep the community informed on all issues which will directly affect the Davis Square area during both construction and operation of the subway. Having carefully read and discussed the Draft Environmental Impact Statement, Red Line Extension, Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008, the Task Force wishes to make the following comments:

1. The Task Force agrees with the general assessment that the long-term benefits of a Red Line Extension to Davis Square will outweigh the numerous short-term dislocations in traffic congestion and detours during construction, impaired air and noise quality during construction, displacement of businesses, discomfort to shoppers and residents during construction, lost business revenue, and possible brief interruptions of utility service.

2. The current EIS does not, however, go into sufficient detail on the means by which the MBTA and its subcontractors would mitigate against these problems. Specifically:

a) Air Quality - the discussion concentrates on problems of auto emissions after construction rather than the admitted problems of dust and emission during construction by construction machinery and congested traffic. The estimates of CO levels (V-38) appear to be founded on a sophisticated general model (as detailed in II-95ff and the supporting document SDV). The model makes resourceful use of often fragmentary and outdated data and an overly optimistic and already outdated projections of the implementation of federal auto

- 2 -

emission standards. But the defects of this model and its assumptions are less important than the failure to provide an adequate discussion of the MBTA's intended methods of controlling air pollution during construction. Significantly, there is no section either in the Davis Square Study (Chapter V) or in the study of general conditions of construction (Chapter II) that deals directly and in detail with construction impacts on air quality. A remarkably brief paragraph in Section II-144 on air quality during construction provides no evidence to support its assertion that air quality would not deteriorate beyond federal standards. Which standards? How great would be the anticipated deterioration? Moreover, section X-2 which repeats verbatim the material in II-144 does not propose any contractual obligations by subcontractors to keep air quality within acceptable bounds. This contrasts significantly with the statement that "contractors would be required to comply with noise abatement requirements". Why are there no similar requirements regarding air pollution control, such as watering and covering procedures, emission control devices for construction equipment, etc.? Since the Davis Square neighborhood has, as noted in the DEIS the highest population density in Somerville, itself one of the most densely populated U. S. cities, such measures should not be left vague or voluntary in contractual agreements or in a DEIS providing authorization for them. The Task Force feels that the final EIS should contain a more detailed discussion of air quality during construction including specific data and suggested contractual provisions.

b) Reuse of the Right-of-Way - Since the very first public discussions of the Davis Square Red Line extension residents and business groups alike have focused on the elimination of freight uses in the railroad right-of-way as critical to the proposed plan. Indeed, the elimination of freight service and the use of the land for publically agreed upon purposes was a crucial variable in swaying many voices in the community to accept the Holland-College Avenue location over the alternative Cutter Square proposal. Public use of right-of-way land has been seen by the Task Force as essential to easing increased burdens on parking, recreation, community and other facilities which the Red Line extension will put on the Square.

The DEIS takes cognizance of these citizen discussions noting, for example (V-27) that a \$50,000 MAPC grant will be provided for planning related to the use of the land. However, the maps appended to the Davis Square section of the report do not indicate any public use of the right-of-way other than for the MBTA station facilities, and the DEIS does not specifically discuss the importance of local

- 3 -

e of this land and leaves open the option of retention of the land by the MBTA for bus storage, idling, repair or other undesirable uses. It has been the consistent and unanimous view of the Task Force that without the elimination of the freight use of the right-of-way and the use of the resulting land for purposes to be agreed upon by community groups, the net environmental impact on Davis Square might well be adverse. The vagueness could easily be eliminated by a new map showing that portion of the right-of-way to be reserved for community use for the competing needs now under discussion as noted on V-26, 27, "Induced and Joint Development".

3. The Task Force feels the impacts associated with maintaining freight service during the transit construction make the project less desirable. In order to maintain freight service, the tracks would have to be relocated, requiring increased takings of business properties and additional project costs. Track relocation will cause substantial disruption of the businesses along Highland Ave., specifically Middlesex Federal Savings Bank, Kolokithas Upholstery, Shawmut Bank and Sametron Electronics. Pg. V-25 outlines specifically only those mitigating measures which relate to actual property takings and the Middlesex Bank. The Task Force feels there should be specific discussion of what measures would be taken by the MBTA to minimize any adverse effects to the other businesses on Highland Ave. during construction.

4. The Task Force feels that most businesses should be given more than the minimum of four (4) months notice referred to in the DEIS (V-25) if they are required to relocate. One Task Force member felt he would need a minimum of one (1) year's notice in order to plan the relocation of his bank.

5. The Task Force favors the current proposal that there be only one station mezzanine and one fare collection area. Also, that there be no "store front" station entrance on Highland Avenue and the underground pedestrian tunnel which would be associated with it.

6. Increased pedestrian as well as vehicular congestion is anticipated, therefore the Task Force strongly urges that the final EIS discuss the means for providing safer pedestrian movement through the Square to the subway station.

7. Projected parking demand (C.T.P.S.) would be approximately 1200 vehicles per day vs. only around 625 parking spaces currently available to non-shoppers throughout the Square. This lack of parking is projected to divert only 120 vehicles daily from park-&-ride to kiss-&-ride or bus service. Still, the Task Force realizes the possibility of the large number of projected kiss-&-riders might cause

January 24, 1977

- 4 -

reased congestion if no provision is made for them. While not wishing to encourage kiss & ride by out-of-towners, the Task Force does feel the final EIS should discuss possible alternative sites for kiss-&-ride parking, along with methods of policing this area against use by all-day parkers.

8. The consultants for the pre-grant engineering have recommended to the Task Force that there be further study of a considerably deeper station at Porter Square, and its associated deeper tunnel alignment between Porter and Davis Squares, than that shown in the EAR/DEIS. In addition, a modification of the EAR/DEIS horizontal alignment between Porter and Davis has been recommended for study with the objective of reducing interference with businesses along Highland Avenue between College Avenue and Grove Street.

The benefits of these schemes to Somerville residents and businesses in terms of reducing possible adverse construction and operational impacts appear to be sufficient to justify further analysis of this alternative, and the Task Force recommends this work proceed.

9. Other problems seem to be handled adequately in the DEIS. We especially note with approval the provision that the measures for noise abatement during construction be made contractual with firms engaged to do the work.

If you have any questions on the Task Forces' comments, please contact me.

For the Task Force,



Sam Reece
Davis Square Planner

DAVIS SQUARE TASK FORCE, January 24, 1971

<u>Paragraph Number</u>	<u>Response</u>
1.2a	The impacts of construction activities on air quality are discussed on pages II-181 and X-2.
1.2b	The extent of right-of-way for community use is generally described under the LAND USE Section of Chapter V, in a revised paragraph "Joint Development", page V-25
1.3	A brief discussion is added to the LAND USE Section of Chapter V, sub-section "Urban Design", subparagraph <u>Mitigating Measures</u> .
1.4	The 4-month time frame for a notice to vacate reflects the minimum required under State law. The Authority's policy with respect to the time for relocation is to provide whatever is reasonable and necessary for the particular case in question.
1.5	One station mezzanine and one fare collection area are now part of the project. No "store front" entrances are proposed on Highland Avenue.
1.6	See Section NEIGHBORHOOD AND COMMUNITY FACTORS of Chapter V, last sub-section <u>Mitigating Measures</u> .
1.7	See TRAFFIC AND TRANSPORTATION Section of Chapter V, subsection <u>Mitigating Measures</u> .
1.8	This alternative has become part of the project. The project description has been modified accordingly.

WARD SIX CIVIC ASSOCIATION

January 25, 1977

*see serial
to Dept*

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

1. RECEIVED

JAN 28 1977

UCA-30

Dear Mr. Benjamin:

The Ward Six Civic Association is an active group of residents and property owners interested in the future of Davis Square, Somerville. As such, we have read and discussed the Draft Environmental Impact Statement, Red Line Extension, Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008 and wish to make the following comments:

1. The Ward Six Civic Association (W6CA) agrees with the general assessment that the long-term benefits of a Red Line Extension to Davis Square will outweigh the numerous short-term dislocations in traffic congestion and detours during construction, impaired air and noise quality during construction, displacement of businesses, discomfort to shoppers and residents during construction, lost business revenue, and possible brief interruptions of utility service.

2. The current EIS does not, however, go into sufficient detail on the means by which the MBTA and its subcontractors would mitigate against these problems. Specifically:

a) Air Quality - The discussion concentrates on problems of auto emissions after construction rather than the admitted problems of dust and emission during construction by construction machinery and congested traffic. The estimates of CO levels (V-38) appear to be founded on a sophisticated general model (as detailed in II-95ff and the supporting document SDV). The model makes resourceful use of often fragmentary and outdated data and overly optimistic and already outdated projections of the implementation of federal auto emission standards. But the defects of this model and its assumptions are less important than the failure to provide an adequate discussion of the MBTA's intended methods of controlling air pollution during construction.

January 25, 1977

- 2 -

significantly, there is no section either in the Davis Square study (Chapter V) or in the study of general conditions of construction (Chapter II) that deals directly and in detail with construction impacts on air quality. A remarkably brief paragraph in Section II-144 on air quality during construction provides no evidence to support its assertion that air quality would not deteriorate beyond federal standards. Which standards? How great would be the anticipated deterioration? Moreover, section X-2 which repeats verbatim the material in II-144 does not propose any contractual obligations by subcontractors to keep air quality within acceptable bounds. This contrasts significantly with the statement that "contractors would be required to comply with noise abatement requirements...." Why are there no similar requirements regarding air pollution control, such as watering and covering procedures, emission control devices for construction equipment, etc.? Since the Davis Square neighborhood has, as noted in the DEIS, the highest population density in Somerville, itself one of the most densely populated U. S. cities, such measures should not be left vague or voluntary in contractual agreements or in a DEIS providing authorization for them. The W6CA feels that the final EIS should contain a more detailed discussion of air quality during construction including specific data and suggested contractual provisions.

b) Reuse of the Right-of-Way - Since the very first public discussions of the Davis Square Red Line extension, residents and business groups alike have focused on the elimination of freight uses in the railroad right-of-way as critical to the proposed plan. Indeed, the elimination of freight service and the use of the land for publically agreed upon purposes was a crucial variable in swaying many voices in the community to accept the Holland-College Avenue location over the alternative Cutter Square proposal. Public use of right-of-way land has been seen by the W6CA as essential to easing increased burdens on parking, recreation, community and other facilities which the Red Line extension will put on the Square.

The DEIS takes cognizance of these citizen discussions noting, for example (V-27) that a \$50,000 MAPC grant will be provided for planning related to the use of the land. However, the maps appended to the Davis Square section of the report do not indicate any public use of the right-of-way other than for the MBTA station facilities, and the DEIS does not specifically discuss the importance of local use of this land and leaves open the option of retention of the land by the MBTA for bus storage, idling, repair or other undesirable uses. It has been the consistent and unanimous view

January 25, 1977

- 3 -

of the W6CA that without the elimination of the freight use of the right-of-way and the use of the resulting land for purposes to be agreed upon by community groups, the net environmental impact on Davis Square might well be adverse. The vagueness could easily be eliminated by a new map showing that portion of the right-of-way to be reserved for community use for the competing needs now under discussion as noted on V-26, 27, "Induced and Joint Development."

3. Other problems seem to be handled adequately in the DEIS. We especially note with approval the provision that the measures for noise abatement during construction be made contractual with firms engaged to do the work.

4. The consultants for the pre-grant engineering have recommended to the Davis Square Task Force that there be further study of a considerably deeper station at Porter Square, and its associated deeper tunnel alignment between Porter and Davis Squares, than that shown in the EAR/DEIS. In addition, a modification of the EAR/DEIS horizontal alignment between Porter and Davis has been recommended for study with the objective of reducing interference with businesses along Highland Avenue between College Avenue and Grove Street.

The benefits of these schemes to Ward 6 residents and businesses in terms of reducing possible adverse construction and operational impacts appear to be sufficient to justify further analysis of this alternative, and the W6CA recommends this work proceed.

Sincerely,

Tom Pelham

Tom Pelham
President
Ward Six Civic Association

WARD SIX CIVIC ASSOCIATION, January 25, 1971

Paragraph
Number

Response

All

See response to Davis Square Task Force letter on pages 180-184 of this volume.

LEAGUE OF WOMEN VOTERS OF ARLINGTON
ARLINGTON, MASSACHUSETTS 02174

MA. 23-9008
FILE

*See
ent 1/27*

January 27, 1977

RECEIVED

Mr. Peter Benjamin
Director
Office of Program Analysis
Urban Mass Transit Authority
U.S. Department of Transportation
Washington D.C. 20590

FEB 1 - 1977

UTA-30

Dear Sir:

- (1) The League of Women Voters of Arlington has severe reservations about the draft of the Environmental Impact Statement concerning the Red Line Extension - Harvard Square to Arlington Heights, Boston, Massachusetts, Project: MA-23-9008. There are too many unanswered questions regarding wetland and open space protection in the Alewife and Millbrook areas, as well as the Great Meadows. Air pollution near each station is a concern given the anticipated increase in numbers of buses, automobiles, and trucks in these areas. There are also questions that need to be answered relating to present bus service and future feeder bus systems so that all of Arlington will be served and not just the major intersections that tend to bring in commuters outside of Arlington.
- (2) Though we have not studied the statement in detail ourselves, we urge you to listen to the citizen groups that are responding -- the Conservation Commission, the Red Line Summer Study Group, the Selectmen and their Transportation Committee, the East Arlington Residents Association, the St. Agnes Parish, the Redevelopment Board, the Alewife Task Force, as well as other groups and individual citizens. We support the citizen involvement that is required by the National Environmental Policy Act.
- (3) We think further study is necessary to determine if a Red Line Extension is environmentally feasible in Arlington; the present draft appears to be incomplete.

Would you please send us a copy of the final statement.

Thank you very much.

Sincerely yours,

Heather Cannon

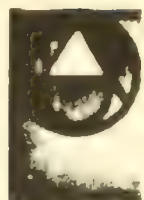
Heather Cannon
President

LEAGUE OF WOMEN VOTERS OF ARLINGTON, January 27, 1977

Paragraph
Number

Response

- | | |
|---|--|
| 1 | All of these problems or issues have been discussed in the Final EIS. See pages VII-68, VIII-68, and II-52. |
| 2 | See responses to letters from Arlington Conservation Commission, Red Line Summer Study Group, Town of Arlington, the East Arlington Residents Association, the St. Agnes Parish, and the Alewife Task Force. |



FILE MA-22-9008

PLANNING OFFICE FOR URBAN AFFAIRS | Archdiocese of Boston

7 Marshall Street · Boston, Massachusetts 02108 · Tel. 227-2200 · Rev. Michael F. Groden, Director

January 21, 1977

Mr. Robert E. Patricelli, Administrator
UMTA, Department of Transportation
NASSIF Building
400 7th Street, S.W.
Washington, DC 20590

Dear Mr. Patricelli:

This office has recently been advised by the St. Agnes Task Force that you have graciously extended the deadline for submission of comments on the draft Environmental Impact Statement of the Massachusetts Bay Transportation Authority to January 27, 1977.

Many members of St. Agnes parish, as well as other residents of Arlington, are convinced that the portion of the proposed extension of the Red Line from Somerville to Arlington Center did not receive the same degree of careful planning and analysis as has obviously been given to the portion of the proposed extension from Harvard Square through Cambridge and Somerville.

We understand that the Task Force is in the process of preparing comments and objections to the Environmental Impact Statement, and we are confident that the Department of Transportation will carefully weigh these specific concerns before reaching any decision on funding the proposed Red Line extension as it is now contemplated. The metropolitan Boston transit system is an old one with all of the problems that necessarily accompany an ancient system. The MBTA contains many dedicated and competent planners, and recent improvements and extensions to the system reflect their competence and dedication.

However, since many persons have serious reservations about the presently proposed extension through Arlington, we believe it is very important that their objections receive a thorough evaluation. Your decision to grant them additional time to complete their report is reassuring, and we are confident that you will carefully consider their views in reaching a prudent decision.

Very truly yours,

James G. Dolan, Jr.
James G. Dolan, Jr.
General Counsel

JGD/jaf

PLANNING OFFICE FOR URBAN AFFAIRS, ARCHDIOCESE OF BOSTON,
January 21, 1977

Paragraph
Number

Response

All

See responses to letter from St. Agnes'
Rectory on page 193 of this volume.

January 25, 1977

Mr. Robert E. Patricelli, Administrator
UMTA, Dept. of Transportation
Nassif Building, 400 7th St. S.W.
Washington, D.C. 29590

Re: Draft EIS Red Line
North Extension
Boston, Ma.
MA-28-9008
(November, 1976)

Dear Mr. Patricelli:

(1) On behalf of the St. Agnes Task Force in Arlington, Massachusetts, I am transmitting the following:

1. A summary of our analysis of the UMTA Draft Environmental Impact Statement, November 1976, on the proposed Red Line Extension, Harvard Square to Arlington Heights, MA-23-9008. This summary is contained in the body of this letter.
2. Annotated copies of the UMTA Draft EIS documents, Vols. One and Two. A committee of the St. Agnes Task Force has made 500 notations in these two volumes--135 in Volume One and over 500 in Volume Two. These notations point out inaccuracies and distortions in the Draft EIS, and specific points of disagreement between the EIS and Town of Arlington Policy on the Red Line Extension.
3. A chronological file of selected articles and statements compiled by the St. Agnes Task Force. The St. Agnes Task Force submits these articles and statements to UMTA to help indicate substantial unresolved community concern over the Red Line Extension, to make available information which the Task Force feels is relevant to UMTA's evaluation of the Draft Environmental Impact Statement (EIS) and to make a part of the public record certain data which might otherwise not be transmitted to UMTA. The period covered by this compilation is March 31, 1976 to January 25, 1977.

(2) The views of St. Agnes Task Force have not changed since the Task Force was formed in April, 1976 to protest Arlington Center from the construction of MBTA facilities on Russell Common. As the Task Force deepened its understanding of the issues involved in the proposed Red Line Extension, it became clear to us that the Red Line would have irreversible consequences on the Town

(3)

and that the termination of the Red Line anywhere in Arlington would have serious undesirable consequences for the quality of life in Arlington. Thus, our initial interest in protecting church, educational, youth recreation and elderly activities in Arlington Center broadened to a general concern for the quality of life in Arlington. It remains unalterably so today.

(6) The St. Agnes Task Force is the principal community based group identified with Arlington Center. (An earlier Arlington Center Task Force appointed by the Arlington Selectmen largely from the business community was found to be unrepresentative and ceased regular meetings last March.) At the same time the St. Agnes Task Force has not limited its interests and activities exclusively to Arlington Center. It has preferred to identify with the interests of the whole town insofar as considerations of the quality of life and protecting against undesirable social consequences are concerned.

(5) St. Agnes Parish is the center of worship of over 12,000 of Arlington's 55,000 townspeople and some 4000 families. The Parish is the largest church group in Arlington and the second largest Parish in the Archdiocese of Boston. The Parish includes a geographic area of roughly 40 per cent of the entire land area of Arlington. It includes or borders roughly half of the proposed Red Line linear alignment in Arlington and one of the two proposed Arlington MBTA Red Line stations-- the one at Arlington Center.

(6) The St. Agnes Task Force supports the Red Line Policy Statement of October 14, 1976 of the Town of Arlington Board of Selectmen:

"Moved that the official position of the Board of Selectmen is that we oppose the extension of the Red Line until those responsible for mass transportation produce the necessary plans and funding to accomplish our goals, namely, that of an underground configuration, throughout the Town; that there will be no terminus in Arlington, temporary or permanent, and that it will ultimately extend to Route 128; further that although we will cooperate in any way to assist in developing the information, citizen input and plans to accomplish these and related goals and objectives, we rescind our support until the total package has been produced acceptable to the citizenry of this community. Said action is not to be construed as lack of support for the concept of mass transportation through the development of the Red Line".

(7)

Pursuant to this policy statement the St. Agnes Task Force makes the following general observations about the UMTA Draft EIS:

1. We demand that the MBTA submit a copy of its final application for the St. Agnes Task Force prior to its submission to UMTA, as promised by the MBTA, and that our Task Force comments on the application be included in that final application. We have had consistent, well-documented difficulty convincing the MBTA to honor its pledge.

January 25, 1977

2. The UMTA Draft EIS is virtually silent on the subject of a station for the Red Line at Arlington Center. We wish to point out once again that under no circumstance can we accept a terminus of the Red Line in Arlington, temporary or permanent. We are determined to exhaust every relief available to prevent this from occurring
3. We are gratified to note that earlier plans to terminate the Red Line "temporarily" at Arlington Center have been abandoned, at least in principle by the MBTA. At the same time, we are mindful that Senator Brooke's eleventh hour announcement of "tentative" Red Line funding to Arlington Center could inadvertently lead to a temporary terminus there. We are determined to prevent this. We are unalterably opposed to a terminus at Arlington Center or at Arlington Heights.
4. The UMTA Draft EIS is in fundamental conflict with Town of Arlington policy by including a terminus at Arlington Heights and an open cut alignment between Arlington High School and Arlington Heights Station-- which would be at grade. We strongly oppose any and all above ground alignment and station facilities for the Red Line.
5. The St. Agnes Task Force takes no formal position on a terminus at Alewife Brook. We favor the Selectmen's policy statement--underground configuration throughout the Town of Arlington and completely through the town all the way to Route 128. We prefer to support the wishes of the Alewife Task Force and the people of East Arlington who are most affected. Accordingly, the Task Force has refrained from commenting in the UMTA Draft EIS about any aspect of the Alewife Station proposal. We rely on those who have better knowledge of the Alewife environmental impact than we. Were the Alewife group to favor an Alewife terminus among the three Arlington related Red Line stations identified in the UMTA Draft EIS, we would support their findings--but only under those circumstances. Among other important EIS deficiencies, we believe the Alewife hydrologic data inadequate.
6. The UMTA Draft EIS is unthinkable devoid of energy conservation considerations. Most of the Red Line Extension planning-- at least the choice of technological options-- has occurred after the 1973 Arab Oil Embargo. Yet the UMTA Draft EIS makes no comparative energy consumption estimates for the extension of public transit itself. This is a serious omission at a time when both the Ford and Carter administrations have given high national priority to energy conservation technologies. It is doubly important to address this problem in energy-poor New England. Transportation planners generally have not given adequate attention to comparative energy savings among competing public transit technologies.

7. The user cost/benefit analyses in the UMTA Draft EIS are highly questionable. By the MBTA's own standards, the Town of Arlington is already well served by the existing bus service. To the extent that MBTA fares are long overdue for an increase (no change since 1967), and that users' cost must also include their share of added Town costs of rapid transit and their share of any costs and/or delays incurred in getting to MBTA stations, the cost/benefit ratios are understated-- or conversely, the benefits of rapid transit are overstated. No data are given to substantiate Arlington Red Line operating expenses.
8. The contrast between the extent and quality of Red Line planning in Cambridge and Somerville on the one hand and Arlington on the other should be plainly evident to UMTA and the Environmental Protection Administration. Whereas great care has been taken to confront most of the issues and environmental concerns in Cambridge and Somerville, the citizens of Arlington are forced to react to partial plans, inadequate environmental impact data and no plans in many instances. It is not clear yet who or which group is responsible for having made a desperate lunge to include Arlington in this particular rapid transit extension proposal at the last minute, but the UMTA Draft EIS clearly reflects the lack of hard data on sensitive social, environmental and ecological effects.
9. The Town of Arlington has not made an adequate assessment of the probable Red Line effects on its own budgets for public safety, public works, the Town's assessment for the annual MBTA operating deficit, and effects on property values generally. These considerations, when added to the immediate social and environmental effects, substantially reduce the advantages of the Red Line to Arlington townspeople. While these considerations are not central to the UMTA Draft EIS they nevertheless are an integral part of a community's response to the advent of rapid transit and can significantly affect the final outcome.
10. The UMTA Draft EIS carries a gross misrepresentation of Town of Arlington Red Line Policy by stopping its chronology of this policy evolution at May 5, 1976. How can a document issued in November, 1976, purporting to be truthful, omit the October 14, 1976 Selectmen's Red Line Policy statement in Arlington?
11. Likewise, the work of the St. Agnes Task Force-- which receives just three paragraphs in Appendix F (pp. 27, 28) is grossly understated. To help UMTA understand the scope, and depth of the Task Force's commitment to preserving the quality of life in Arlington, a reading of the enclosed chronological file is recommended.

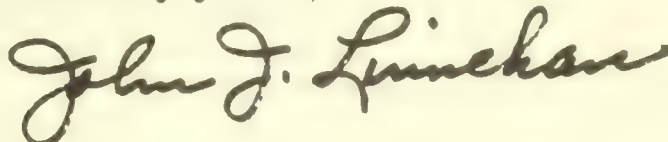
January 25, 1977

12. The St. Agnes Task Force remains deeply concerned over the undesirable social consequences of the Red Line in Arlington. The environmental impacts of each of the proposed Arlington stations as well as Alewife are based on inadequate hydrologic, meteorological, ecological, and traffic congestion data. The lack of reliable feeder bus information reduces the impact estimates to pure conjecture. In the proposed construction we fear that our youth and the elderly will be especially impacted.

More time is clearly needed to assess the total environmental impacts of the Red Line in Arlington. It is tempting to speculate that the inclusion of Arlington in the Red Line Extension proposal was done largely in order to allow the funding fall back position to rest in Cambridge, where it is important for the MBTA to be able to honor its pledge that the Authority is working with the next town up the line, hoping to press on to Route 128. We trust that, if this is true, UMTA will not permit the MBTA application to be approved, insofar as it applies to Arlington, until it conforms to the needs, wishes and policies of the Town of Arlington.

The St. Agnes Task Force further asks UMTA to withhold any and all construction funds and plans for the Arlington segment of the Red Line until the UMTA Draft EIS deficiencies and distortions are corrected.

Sincerely yours,



Rev. Msgr. John J. Linnehan,
Chairman, St. Agnes Task Force

Enclosures

<u>Paragraph Number</u>	<u>Response</u>
7.1	The St. Agnes' Task Force will be given the opportunity to review the final Capital Grant Application prior to its submission to UMTA.
7.2	The Project covered by this EIS and the accompanying Capital Grant Application is for an extension to Arlington Heights which eventually is proposed to extend to Route 128.
7.3	A temporary terminal will not be built at Arlington Center. The Arlington section of the Project will be built as one segment.
7.4	The Red Line Extension project has been modified to include a tunnel/cut-and-cover alignment through the entire Town of Arlington. The Arlington Heights Station would be below grade.
7.5	The current MDC Mystic River Watershed Hydrological Study will address the impacts of transit and road improvements on the Alewife area. This study is partly sponsored by the MBTA.
7.6	Additional analysis of the energy consumption implications of the Red Line Extension has been conducted since the finalization of the DEIS. This new information and analyses has been added to the Energy Section of Chapter II. See Pages II-113 thru II-117 .
7.7	Operating costs were calculated for the Red Line Extension using cost data compiled for the Existing Red Line System. A listing and explanation of items included as operating costs is contained in a memo dated December 30, 1974, drafted by the Executive Office of Transportation and Construction. See Appendix L.
7.8	During the Pre-grant Engineering phases for the Red Line through Arlington, every effort will be made to resolve all problems and to

ST. AGNES' RECTORY (Continued)

<u>Paragraph Number</u>	<u>Response</u>
7.8 (Continued)	answer all questions concerning the project and its impacts. Planning for the Arlington Section will be carried out at the same level as it has been during Pre-grant Engineering of the Cambridge and Somerville Sections.
7.9	The effects that the Red Line Extension may have on the Town's assessment are discussed in a new section of the EIS, entitled <u>MBTA Deficit and Assessment</u> . See page II-52.
7.10	Statement has been added to the material for Arlington Center and Arlington Heights, Chapters VII and VIII. See pages VII-32 and VIII-35.
7.11	All local groups who participated in the planning of the Red Line Extension and the development of the EIS have been given equal recognition in the EIS text.
7.12	It is the youth and elderly who benefit the most from mass transportation because these are the groups who depend least on the automobile for travel. Reliable Feeder Bus information has been added to the Final EIS. See page II-5.

FILE

MA 23-9008

*See
encl. 1/27*

Red Line Summer Study
c/o Dept. of Planning &
Community Development
Town Hall
Arlington, Massachusetts 02174

January 22, 1977

*Certified Mail
Return Receipt Requested*

RECEIVED

JAN 31 1977

UCA-30

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

Re: Draft Environmental Impact Statement, Red Line Extension
Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008

Dear Mr. Benjamin:

The following comments on the above-mentioned report are being submitted to you by the "Red Line Summer Study," a citizens' group in the Town of Arlington.

The Red Line Summer Study was convened early in the summer of 1976 by the Arlington Citizens' Involvement Committee (CIC) in response to growing citizen concerns over the proposed Red Line extension project. During the summer, the group proceeded to examine the available information and consider the various issues involved. The group's findings and recommendations were summarized in the Feedback Supplement, which has been distributed to agencies involved in the planning for the Red Line extension as well as to residents of Arlington. This distribution was carried out in October of 1976. A copy of the Feedback Supplement was mailed to the Urban Mass Transportation Administration (UMTA).

The Red Line Summer Study will continue to meet and monitor the progress of the planning, design and engineering phases of the project as it affects Arlington, and will continue to provide a forum for citizen input into the process. The group has been focussing its attention on review of the Draft Environmental Impact Statement (DEIS) distributed by UMTA.

1/22/77

Introduction:

The Red Line Summer Study (Summer Study or Group) feels that the Capital Grant Application should be split into two sections, the first part covering the work from Harvard Square to Davis Square. Information available from Somerville and Cambridge seems to indicate that both communities are satisfied with the plans as proposed through Davis Square. However, there seem to be many unresolved issues concerning the proposal for the Alewife station and beyond. The Summer Study feels that the DEIS does not properly address these concerns and therefore requests that they be restudied.

Further, the Summer Study wishes to express disappointment that the DEIS of the Massachusetts Bay Transportation Authority (MBTA) was adopted as the Draft Environmental Impact Statement of UMTA without any corrections having been made, even though the errors were obvious and had been brought to the attention of the MBTA by various groups involved in reviewing the DEIS. This lack of concern for a well-written document has only served to increase the difficulty encountered by local officials and citizens in their review of the documents.

The citizens, particularly, have no further input to the DEIS since there is no review of the Final EIS called for except by certain agencies.

The comments of members of the Summer Study who participated in the review of the DEIS are attached to this letter. These comments are both general and specific in nature. They are primarily confined to the Arlington phase of the extension and include the following areas: Alewife to Lake Street; Spy Pond

Peter Benjamin
MA-23-9008, DEIS

-3-

1/22/77

to Arlington Center; Garages and Open Trench; Historical Areas, Arlington Heights area; Traffic Problems and Ridership. The Group did not feel a need to reach a consensus; therefore, some of the comments may overlap and some are highly individual.

Sincerely,

A handwritten signature in cursive script that reads "Elsie C. Fiore".

Elsie C. Fiore, Chairman
Red Line Summer Study

F/s

Attachment: Comments on DEIS

The severe environmental problems along the extension of the Red Line from the Alewife station to Arlington Center have been recognized in the DEIS (II-88 -- II-126). What troubles the citizens living along the line of this extension is the lack of definitive information about ways in which the environmental problems will be handled.

1. The Metropolitan District Commission (MDC) will shortly be conducting a hydrology study in the Alewife area. Since it will be at least a year and possibly longer before the results of the study are known, the Summer Study feels that any action on the Arlington sections of the DEIS is premature. Because of the lack of a hydrology study, absence of complete soils analysis (VI-28,29) and inadequate discussion of air pollution, it is difficult to assess the impacts the extension of rapid transit and the accompanying road systems (VI-33, 36,39) would have on the ecology of the surrounding areas.

2. Vol. 1 (1-7) of the DEIS states "Concurrently with the Red Line Extension project, the Massachusetts Department of Public Works conducted an environmental impact study in connection with the Route 2 Highway Improvement project." The Summer Study feels this statement is designed to confuse the reader. The Department of Public Works (DPW) did not conduct an in depth study of the environmental impacts of the proposed road system at Alewife. The Alewife group was presented with an Environmental Overview Summary, not an Environmental Impact Statement.

3. Contrary to a statement made in VII-67, "Probable Impacts from the Project," some residents of the Spy Pond area feel there is INSUFFICIENT SPACE existing between the MBTA r-o-w and Spy Pond for the construction of a two-way tunnel. When the DEIS refers to the northeastern shoreline as being in public ownership,

it is felt that it should also indicate how small a corner of the pond it really is. The Red Line will go through every inch of that tiny bit of public shoreline. The Planning Department in the Town of Arlington has advised us that staging will be used over this area to implement the construction. Considering the number of small children and other people who use this limited open space, both winter and summer, it is felt that a very serious safety hazard exists. This area will probably have to be closed during construction, thereby depriving residents of the use of this facility for some period of time.

4. It is felt that removal of vegetation along the alignment bordering on Spy Pond, including very large trees with huge root systems, will cause land movement and settling in the future. People living near or abutting the roadbed will be greatly impacted with the vibration from trains causing constant ground movement. The water table in this area is extremely high (VII-3). MBTA representatives have informed the residents in this area that the Authority does not pay partial damages for property adversely affected by construction.

5. The effects of noise and vibration will be felt all along the Red Line extension whether you are in your home, your business, shopping, church, school or taking part in recreational activities unless the mitigating measures proposed at various places in the DEIS are initiated. Vol. 2 (D-7) states:
"To date, the Urban Mass Transportation Administration has not established specific procedures for assessing the noise impact of a new transit system. As a result, a number of different criteria and guidelines are candidates for consideration."

The Summer Study feels that the criteria for assessing noise and vibration impacts should be determined before the DEIS is made final.

6. The 1600 foot length of transitway, expanded to 46 feet wide, which is proposed for a turnback track in East Arlington (VII-1,9,16) creates an impact beyond the existing railroad right-of-way. This additional impact is not delineated. Further, this disruption of wetlands and flood plain, which are already inadequate for predictable precipitation is unwise. Also, this area contains Thorndike Field, an open space play area. No discussion is held on alternative play areas to be used during construction.

7. What is going to happen to the material removed from the excavation for the turnback track as well as material removed from the rest of the tunnel. How long will the trenches remain open and where will construction materials be stockpiled?

8. "The use of pumping facilities to eliminate potential flooding during periods of heavy rain" is referred to on VII-3. There is no information given as to where these pumping facilities will be located and whether they will be permanent or temporary. This same section refers to the high water table at Spy Pond and to the numerous major and lesser utilities requiring relocation or support in this area, including a 16-inch gas line crossing at Lake Street and a 16-inch gas line under Arlington Center. "Treatment of these utilities requires further study during the design phase (VII-3)." It is felt that more information needs to be gathered regarding relocation or support of these utilities before the design phase begins. It is felt that the casual treatment of these serious problems in the DEIS flagrantly ignores the concerns of the Spy Pond community.

9. There are presently four train crossings in Arlington Center, not three (VII-21). One commuter car and one freight train cross in each direction daily. There is an occasional extra freight train. Although the Town has expressed an interest in having a linear park along the right-of-way over the transit roadbed,

this may prove invalid if the Interstate Commerce Commission (ICC) determines that the present freight line along the Bedford Branch must remain in order to service Hanscom Field (VIII-18).

The MBTA notes that the retention of the freight line would preclude the development of a linear park over the transit line (VIII-18). This comment is contrary to the proposal to leave the transitway uncovered and to squeeze the park next to the open cut (VIII-33). The Summer Study feels that the open transitway and the freight line would equally preclude the option of the linear park.

10. The cost of the dual transit and freight line are within 10% of that for the transit alone. Further, the construction times are identical (VII-19).

Also, the cost for each line item, except the transit structure, is cheaper for the dual freight and transit option than for the transit structure alone. It is projected that the electrification and signaling would be cheaper with the retention of the freight line (VIII-9, Table 3; VIII-17, Table 7). The Summer Study views the projections set forth in these references with extreme skepticism.

11. Table 3 at VIII-9 shows construction costs to Arlington Heights and Table 7 at VIII-17 shows construction costs for an at-grade alternative. The floating slab is much cheaper for the at-grade option. However, if this savings is achieved at the cost of additional noise and vibration generated by the track during operation, it is felt that this latter proposal is shortsighted.

12. Bus service from the west into Arlington Heights is understated (VIII-22, Table 11). It is felt that even with a station in Lexington Center and express bus service to Alewife, more than two buses per hour would be required to service the population northwest of the heights station. A more realistic value would

be peak service at 12-15 minute intervals spread among several routes. If the heights station becomes a temporary terminus, the additional demand might be satisfied by express buses to Alewife, increasing service at that station.

13. Vol. 2 (IX-45) makes a general comment applicable to all estimates of user benefits. The Summer Study advocates more sophisticated estimates of user benefits which would consider the increasing scarcity and cost of fuel for private, gasoline-powered vehicles.

14. The street widenings discussed at VII-26 and illustrated in Figure VII-3 are contrary to the desires of many town residents who consider the streets to be excessively wide at the present time. The streets are already so wide at the intersection of Mystic and Pleasant Streets that only the agile can cross the full width during one cycle of the pedestrian walking signal.

15. Problems of increased trucking in the general area from Cambridge to Lexington if the freight line is abandoned have not been addressed in the DEIS. During construction, this increased trucking, plus bus, automobile and pedestrian traffic will converge at the various construction sites causing traffic backups, increased pollution and safety hazards. Preliminary design efforts attempted to minimize left turning movements of buses from Mystic Street in the center of Arlington. Since the Town has designated all conveniently located off-street locations as having high priority for future development, bus loading/ unloading facilities will be at curbside. This will further conflict with other traffic.

16. It is felt that traffic estimates are obsolete as shown in Table 8 on VII-20. Local studies indicate that actual values for 1975 are 30% higher than those shown in the table.

Arlington Center Garage

In the original proposal by the MBTA for the station at Arlington Center, there was a garage to be located at the present parking lot in the area known as Russell Common. After intense protest, primarily from the parishioners of St. Agnes parish, whose high school and church abut the Common, the MBTA announced that the plans for a garage on the Common had been cancelled. This revision of plans, alluded to on P. VII-41, Par. 3, is forced by a statute passed this fall by the Massachusetts State Legislature which forbids a garage within 75 yards of parish property.

Our review of the Draft EIS discovered many references to the old proposal for the garage. The most popular explanation for these references is that they are failures of editing of the documentation supplied to UMTA by the MBTA. It appears to be the consensus of the citizens reviewing the proposals for the Red Line Extension that there will be no garage in the center. According to this consensus, all references to the garage in Arlington Center are erroneous and should be deleted. The references discovered during our review are listed below:

<u>Page</u>		<u>Reference:</u>
II-1	Par. 4	Parking for 350 cars is assigned to Arlington Center
II-9	Table 2	Total land takings for the garage: 14 Medford St., 15-27 Mystic St., Russell Common
II-20	Table 4	\$1.84M is included in cost of the station complex to cover a garage
II-42	Par. 1	Parking estimates include 350 cars in Arlington Center
VII-7	Par. 2	Parking for 200 cars is proposed for another site (Mirak property)
VII-8	Table 1	Total land takings for the garage; 14 Medford St., 15-27 Mystic St., Russell Common
VII-10	Par. 2	Construction on Russell Common is discussed
VII-11	Table 3	\$1.84M is costed for the garage
VII-22	Table 9	Park-and-Ride patronage is shown for the station in Arlington Center
VII-24	Table 12	Estimate of excess parking demand assumes a garage in Arlington Center
VII-22	Par. 1	Access to a garage on Russell Common is discussed

Comments to DEIS - Arlington Center Garage (cont.)

<u>Page</u> VII-26	Table 14	Ref. - Traffic includes 350 vehicles to garage in Arlington Center
VII-26	Par. 1	The impact of vehicles entering the garage on Russell Common is discussed
VII-26	Par. 2	Parking is proposed for another site in Arlington Center (Mirak property)
VII-35	Par. 2	The effect of the garage on land use is discussed
VII-35	Par. 3	Possibilities of other parking sites is raised
VII-36	Par. 4	Land takings for the garage are discussed: 14 Medford St., structure on Park Terrace
VII-37	Par. 2	Land taking for the garage is discussed: the alley adjacent to 14 Medford St.
IX -41	Table 4	\$1.84M is included in the cost of the station complex for the railroad alternative to cover a garage
IX-44	Table 5	\$1.84M is included in the cost of the station complex for the LRV alternative to cover a garage

Right-of-Way to Arlington Heights

The proposal by the MBTA specifies that the transitway from just west of the Arlington Center Station to the Arlington Heights station shall be an open, depressed cut. This proposal is unacceptable to most citizens who have reviewed the proposal and is further contrary to the statements by the Board of Selectmen of Arlington noted on pages VIII-30, VIII-33, F-26 and F-29, that the route must be covered throughout Arlington.

The proposal for the open cut through the western half of Arlington forms the basis of much of the budgetary estimates presented throughout the proposal. Since the MBTA, by its own admission, never considered in detail the impact of decking over the entire route through Arlington, it is difficult to note the changes that would be required to the overall proposal by a change to a covered structure. Rather than cite all the offending references, as was done on the previous special topic, we shall select references from the text to support our advocacy of a covered transitway if the Red Line must be extended through Arlington:

Comments to DEIS - Right-of-Way to Arlington Heights (cont.)

- Page VII-36 Par. 3 The MBTA notes the policy of the town government concerning an underground alignment and the concept of the linear park utilizing the entire transit right-of-way. This paragraph applies equally to the route west of Arlington Center. The inconsistency of the proposal in this matter disturbs our group.
- VIII-10 Par. 1 The alternatives given for the proposed open, depressed cut fail to include a continuation of the covered transitway. This disregard for the expressed wishes of the town government has incited many angry comments.
- VIII-2 Par. 5 It is noted that the track would be 18-25 feet below ground level. Would this not be adequate to allow light decking over the cut? The drawing of Figure II-2 indicates that the roof section would be only 14.75 feet above the track. Would the use of decking allow a more shallow track bed, thus partially compensating for the cost of the decking?
- VIII-6 Par. 4 The proposals for a park, providing a visual enhancement for abutters to the transitway, and for barrier walls and fences for protection against vandals are contradictory. The MBTA is not acknowledging the already-demonstrated capabilities of the local vandals. The proposed installation of barriers or thick landscape buffers might serve to conceal the activities of vandals from observers on abutting property or from patrons of the park.

The return this winter of the weather to the more severe patterns that were prevalent in the previous two decades introduces the question of obstruction to the transitway by impassable depths of snow or ice. The Red Line was recently disabled for several days in above-ground sections by snow and ice. The use of an open, depressed cut would exacerbate the obstruction, since the precipitation would drift and settle into the channel of the transitway. It would prove most difficult to remove the precipitation from the bottom of the cut after a severe storm. The proposal of the MBTA, drafted in apparent ignorance of the long-term history of winter weather in the northwestern suburbs of Boston, makes no reference to the removal of accumulations of precipitation from the transitway.

Parking (cont.)

Reference:

Table 11-16	Estimated Vehicular Travel - Northwest Subregion
Vol. I; 11-44	These estimates assume existing vehicular trends, would extend to the future and do not consider the possible effects of automobile disincentives. The introduction of new rapid transit service would increase the bus and/or automobile traffic on streets in the vicinity of the stations, the project would <u>generate</u> vehicular trips to the station areas by transit passengers arriving via automobile and, to a lesser extent...by bus.
11-104	The greatest improvement in air quality over the area as a whole will result from <u>more effective control</u> of CO emissions from automotive vehicles.
VII-24	A significant impact of the proposed Arlington Center Station would be the additional traffic attracted to the Massachusetts Avenue-Mystic Street/Pleasant Street intersection. This intersection is already operating at capacity and experiences substantial congestion.
VII-25	The Arlington Center area would be subject to traffic impacts caused by transit users bound for both the Arlington Center and Alewife Stations.
VII-25	A Red Line station at Arlington Center would result in a slight decrease in daily and peak-hour traffic volumes due to the diversion of auto trips to transit; however, this would be <u>offset by an increase in vehicular traffic attracted to the station.</u> (emphasis supplied)
VIII-24	A Red Line station at Arlington Heights would result in a slight decrease in daily and peak-hour traffic volumes due to the diversion of auto trips to transit; however, this would be <u>offset by an increase in vehicular traffic attracted to the station</u> (emphasis supplied).
VIII-24	During peak periods, traffic moves freely through the intersection of Park Avenue and Massachusetts Avenue (level of service A). With the addition of a transit station in Arlington Heights, traffic flow would be restricted during peak periods, resulting in congestion and delays (level of service D) unless intersection <u>improvements</u> are made.

Parking (cont.)

Reference:

- Vol. II; VIII-25 Geometric improvements to the Massachusetts Avenue-Park Avenue intersection -- including elimination of...angle parking on the Park Avenue approaches...would permit parking supply at the station to be increased without adversely affecting traffic at the intersection. ...if some peak-hour congestion and delay (level of service D) would be acceptable, a total of 350 additional parking spaces could be provided.
- IX-28 A 2,000 car garage (at Alewife) would be larger than any existing MBTA parking facility; there is only one garage in Metropolitan Boston that is larger. ...over the course of the day, there would be a demand for an additional 1,400 spaces. Assuming an average occupancy of 1.2 passengers per automobile, the shortage of parking spaces would translate to a loss of up to 1,000 peak-hour park-and-ride patrons... and up to 2,000 off-peak park-and-ride users. Although some of these...would instead use bus service or be dropped off by auto at Alewife, it is predicted that over 90 percent of these persons would probably drive all the way to their final destinations.
- IX-32 Concern about congestion associated with a permanent terminal at Alewife has been a major issue... . Nevertheless, when considering constraints imposed by the availability of capital funds for project construction, the possibility of Alewife as an interim does exist. Such a fiscally-based decision makes it essential that the State and the affected communities develop and implement regulatory policies to allocate a scarce commodity--parking spaces at Alewife. ...Such...policies...include a "first-come-first-served" policy as well as:regulation of admittance to the garage, i.e., during the morning peak hour first admitting those automobiles containing two or more persons.
- COMMENT: We suggest that the solution proposed for a temporary terminal at Alewife should be an integral part of the planning for all stations. The sections of the DEIS cited above refer repeatedly to the CTPS average-occupancy figure of 1.2 persons per automobile and are a reflection of "existing vehicular trends" (Vol. I, Table II-16, II-44). "Existing Vehicular Trends," i.e., the penchant of motorists to travel to the CBD and other congested areas (Cambridge) in single occupant vehicles, should, we think, be discouraged and automobile disincentives built into the project from the outset. A requirement of two or more occupants per vehicle for admittance to all garages, if well advertised in advance, would discourage single-occupant automobile travel, at least that attracted to the garages, which is certainly desirable if control of street congestion and of automobile emissions is a serious goal of the planners of this project.

Parking (cont.)

COMMENT (cont.)

Similarly, if a reduction in the use of fuel is projected as a consequence of the extension of rapid transit, far more significant savings will be possible with the control cited above.

ALIGNMENT -- Underground vs. Depressed

Reference:

Vol. II; VIII-37 The proposed project, creating a depressed transit line through the western half of Arlington...would be compatible with surrounding development with the addition of lightweight decking at certain critical areas. 1) West of Forest Street where the r-o-w is narrow and runs between two residential areas; 2) Between the bleachers of Arlington High School and Summer Street; 3) Between Mill Street and Warren A. Pierce Playground (optional); 4) Adjacent to the Brattle Court Apartments (optional).

COMMENT: How many feet of decking are proposed? What percentage of the total segment? What would be the difference in cost between the proposed alignment and that recommended by Arlington officials?

Vol. II; VIII-39 A landscape buffer and safety fencing should be installed on the remainder of the right-of-way which abuts the parkland between Washington and Forest Streets...opaque barrier walls or fences... should be constructed adjacent to the...pedestrian pathway, etc.

COMMENT: Costs of fencing and pedestrian bridge = \$216,000. How much for landscaping and maintenance? How does the cost of these measures compare with the cost of decking?

See: Vol. II, VII-39: "Without the addition of extensive noise and visual buffers, the depressed option without decking... would be incompatible with adjacent residential and park development. The necessary safety fences (etc.) would create a bifurcation of the East Arlington neighborhood both visually and functionally."

How is the situation in East Arlington different from that in the segment west of the Center station, particularly as it relates to parkland?

See: Vol. II, VII-50: "Alternatives such as a depressed transit line without decking could possibly lower property values in the immediate vicinity of the tracks..."

VII-53: "A depressed line segment without light decking... would negatively impact the community."

Alignment (cont.)

Reference:

- Vol. II; VIII-1 The proposed alignment reflects the concerns of Arlington citizens and public officials.
- VIII-7 A major portion of this segment...would be depressed with retaining walls. ...at some points...light decking would be installed to mitigate noise emissions and safety hazards.
- VIII-44 Pedestrian circulation -

COMMENT: How does this use of the R-O-W differ from that in East Arlington?
See: Vol. II, VII-39; VIII-48.

- Vol. II; VIII-47 A completely decked over depressed transit line would have a greater positive impact on property values
- VIII-56 Depressed section adjacent to parks...Noise.

COMMENT: How do these compare in cost to lightweight decking throughout?

- Vol. II; VIII-33,4 The recommended station plan was formulated as a line station to serve the Arlington Heights residential area and not as a Red Line terminus.

COMMENT: Preliminary Report of Minuteman Study, published Jan. 17, 1977, does not indicate desirability of further extension based on ridership. The Summer Study is skeptical that there is any serious intent to extend the line beyond Arlington in the foreseeable future.

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Sheet 3(A) (2)

This project would present an alternative to the automobile...

COMMENT: Past experience in Boston and elsewhere has not shown a decrease in travel along routes parallel to new transit lines. Traffic volumes along S.E. Expressway continued to increase after Red Line extension to Quincy. Similarly, traffic on the Bay Bridge in San Francisco showed only a slight temporary fall in volume with the opening of BART. Second, when commutation trips are diverted to transit, the auto is usually left at home where other members are free to use it. Thus, benefits from reduced auto use may not be as large as indicated by the reduction in trips.

Reference:

Vol. 1; Summary
Sheet 3(A)(2)

Transit usage will result in reduced travel time....

COMMENT: See Table 11-7 Aggregate 1980 Traveltime Savings to Downtown Boston From Red Line Stations. Over one-third of projected time savings come from users at the Lexington Center and Route 128 stations yet these are not a part of the proposed project.

Vol. 2; IX-31 Arlington Heights is the preferred terminal based on potential ridership.

COMMENT: See Vol. 2, VIII-41 - "Topography contributes to the character of the area. Heights is located in a very narrow portion of the Mill Brook Valley; residences line the hills to the north and south. The area was not suited to become a focus of regional importance and residents believe that it should never attain that status.

See Vol. 2, F-26 - "The Town's Arlington Center-Mill Brook Valley Plan (Sept. 1975) contains many recommendations which are directly related to the Red Line Extension.

See Arlington Center-Mill Brook Valley Plan, Pg. 93, "The street network (Heights) will not support large new traffic generators;" Pg. 98, "The Heights will remain a local retail center with very limited development;" P. 105, "The over-all scale of the Heights station should emphasize that it is a minor stop on the Red Line, not the terminus;" P. 89, "A terminus at Arlington Heights would overload major intersections there as well as introduce higher traffic volumes on residential streets." Also, this conflicts with Vol. I, Summary Page, Item 3, "The project may cause increased growth pressures along alignment and at stations," particularly when (IX-35) states, "proposed project description was established in terms of transit improvement to Arlington Heights."

Also, XI-31 conflicts with the Board of Selectmen's position, May 1976 of "No terminus, permanent or temporary in Town of Arlington.

~~Vol. Summary~~
~~Sheet 4(E)~~

~~Alternatives Considered: Alternative Terminal Points~~

~~COMMENT:~~

Reference:

Vol. 1; Summary
Sheet 4(E)

4. Alternatives Considered (E) Alternative Terminal Points

COMMENT: We submit the proposed site in Arlington Heights was decided upon during the BTPR (Boston Transportation Planning Review) discussions because it was already the property of the MBTA and because it abuts the railroad right-of-way. These facts do not lead to the conclusion that it is the only possible site or even the most desirable one. Because of lack of information about the area west of Arlington, and because information from the Minuteman Area Transportation Study has just become available, no other sites have yet been considered. "Two factors have influenced the decision to define the proposed project in this study as extending only to Arlington Heights. First, ridership projections indicate that while the market area beyond Arlington is significant, it may not justify the expense of third rail rapid transit. Second, the Town of Lexington took the position that the issue of optimal transit investment in the outer Northwest Corridor should be investigated in a study completely devoted to the needs of that area." (IX-34).

The DEIS does not contain the results of the Minuteman Area Transportation Study and this group asserts that the proposed location will have to be re-evaluated at a later date.

The Town of Arlington has bowed more than once to meet the needs of the insensitive proponents of so-called progress. The nationally historic "Dexter House" located near the corner of Pleasant Street and Massachusetts Avenue was demolished and the land used for the Arlington Five Cents Savings Bank's extra parking lot. This historic building was the first children's lending library in the United States.

Again, we are faced with an aesthetic devaluation of this town. The route of the proposed extension has 28 historic sites within its boundaries (VII-62, 63, 64, VIII-57, 58, 59). These sites are broken down into four categories: 1)-primary importance (6 sites); 2) important (5 sites); 3) moderately important (9 sites); 4) mentionable (8 sites). Three of these sites are listed on The National Register of Historic Places.

The DEIS states that most of these sites would experience perceivable vibrations, especially where trains are traveling at a high speed in between stations. This could be eliminated by special treatment of the trackbed. (VIII-59). There is no definite statement that this special treatment would be done and what method would be used. This phraseology lacks complete reassurance and no firm commitment. Although, according to the statement, these structures now experience extreme noise and vibration from the present freight and commuter trains intermittently, there are no data in the DEIS with which to compare the impact of the continuous flow of trains pouring through on the Red Line.

The construction of the station at the Center would take 36 months. Arlington Center is exactly what the term implies. It is the center and focal point of this town. Very few people in this town can avoid contact with it because of its proximity to schools, senior citizens' homes, municipal buildings, churches and businesses. Students from East Arlington pass through the Center as they travel

back and forth to our one public high school; it is used by our youth to get to the Boys' Club. In short, very few people will not feel the impact of the noise, the danger, and the inconvenience of this construction.

The Red Line extension as presently proposed demands too high a price from Arlington for supposed regional considerations. The people to be primarily benefited will be not the citizens of Arlington who already have a reasonable mass transit system, but the commuters from the wealthier suburbs who already use our Town for a highway and would, if the Red Line is extended, use it for a parking lot. We already have excessive amounts of automobile traffic which would unquestionably be compounded by any subway stations in the Town. Our 18th and 19th century street system is already productive of too much air pollution; how much more if thousands of commuter vehicles come into the community?

Development would be one of the by-products of one or more subway stops. The mass transit of the past -- horse drawn cars and the electric trolley -- succeeded in a few short years in bringing a rural community to an urbanized suburb half a century ago. The development patterns and attitudes established then have produced the most densely populated town in the Commonwealth, and the 7th most densely populated community: the population density of Arlington is greater than that of the City of Boston. Certainly we have done more than our share to provide suburban housing convenient to the core city without the stimulus of even greater accessibility -- such greater accessibility would have profoundly negative impacts on the natural and historical environment of the Town.

Speculation is already rife in areas near proposed station locations.

(Notice footnote on II-83 referring to developers.) Proposals have been heard to desecrate the last large undeveloped tract owned by the Town (the Great Meadows in Lexington) for a subway terminus.

The Draft Environmental Impact Statement does not substantiate the need of the people of Arlington for a rapid transit system to replace or augment existing services. At most, the DEIS hints at regional considerations which would place the benefits in Cambridge and other communities and a disproportionate burden upon the Town of Arlington.

<u>Paragraph Number</u>	<u>Response</u>
1.2	The Massachusetts DPW has prepared an updated Environmental Overview Summary for the proposed Route 2 improvements. See Appendix I.
1.3	The existing railroad right-of-way along Spy Pond is from 60 to 70 feet wide. The proposed two-track tunnel is about 31 feet wide. The tunnel alignment should remain within the R-O-W. See sketch in 4(f) section of Chapter II. The construction, by necessity, will take place linearly along the railroad. It is expected that the contractor's staging areas will be located within the railroad right-of-way. The construction specifications will require the maintenance of access to the Spy Pond at all times. Safety requirements dealing with the safety and protection of the public and adjacent properties are clearly stated in the MBTA Division I General Requirements and Covenants.
1.4	<p>It is true that vegetation within limits of the construction will be destroyed. There are a number of items that should alleviate future land movement and settling:</p> <ol style="list-style-type: none">(1) Elimination of the railroad will allow regrading the R-O-W to its natural topography prior to the construction of the railroad.(2) Suitable plantings will be provided to implement whatever open space concept is adopted by the Town of Arlington.(3) Construction will be under the supervision of the MBTA. Contract specification will specify how backfill is to be done such as amount of compaction, type of material, etc. <p>Discussions of noise criteria is expanded in Appendix D. See examples after page D-18. The high water table and its potential relationship to and impact by the tunnel is discussed in Chapter II (see page II-96). The statement on damage payment is not correct.</p>

RED LINE SUMMER STUDY (Continued)

Paragraph Number

Response

Adjacent properties will be inspected and photographed during the design phase by the MBTA. The contractor may do the same prior to the start of construction. MBTA's Standard Specifications Division I Section 7.19 Protection and Restoration of Property states in part, "the Contractor shall, at his own expense, preserve and protect from injury all property either public or private along and adjacent to the proposed work and shall be responsible for and repair at his own expense any and all damage and injury thereto..."

1.5

Discussion of noise criteria is expanded in Appendix D.

1.6

The 1,600 foot length of transitway, expanded to 46 feet wide, which is proposed for a turnback track in East Arlington would be constructed totally within the existing Lexington Branch right-of-way (66' wide). Impacts outside of the right-of-way, particularly to Thorndike Field, would be minimal and short-term impacts. See Page II-150 of the Section 4(f) Statement contained in Chapter II. No play areas would be affected by construction activities. See page VI-105 for discussion of impacts to wetlands.

1.7

For a discussion on Disposal of Excavated Material, see Chapter II. There are several operations that take place during tunnel construction. The major steps are (1) Excavation, (2) Construction of tunnel, (3) Backfill. These phases could be taking place simultaneously at three adjacent segments. This is an option left largely up to contractors in order to provide the greatest construction economies. In typical urban streets, contractors work these operations on a block basis. Trenches could remain open 3 to 6 months. Contractor staging areas for material storage will probably be along the railroad. Some off-railroad sites may be required. These will be further identified during the Pre-grant Engineering phase.

RED LINE SUMMER STUDY (Continued)

<u>Paragraph Number</u>	<u>Response</u>
1.8	These concerns will be addressed during the Pre-grant Engineering phase for the Alewife to Arlington Heights section of the Project.
1.9	Commuter rail service has been discontinued on the Boston and Maine Lexington Branch Railroad. The open-cut transitway referred to on DEIS Page VIII-33. has been replaced by a tunnel/cut-and-cover section.
1.10	The estimates for the Project and the Dual Transit and Freight alternative are basically equal when considering floating slab, trackwork, electrification, signaling, utility relocation, and track removal. The basic cost differences between the two alternatives are the heavier and more expensive transit tunnel structure required to support railroad loading, ventilation costs, and railroad improvement costs. The Dual Transit and Freight alternative would be a viable alternative if the Interstate Commerce Commission fails to allow the MBTA to abandon the Lexington Branch.
1.11	The cost savings between the project and the at-grade alternative result from no floating slab being necessary for at-grade portions of the alignment. Vibration would be adequately dampened by track ballast. Additional noise due to the at-grade nature of the alternative would be expected and mitigating measures such as continuously welded rail and way-side noise barriers as described in Chapter II, Page 119, would be used.
1.12	The proposed Feeder Bus Routing with the Red Line Extension is discussed in Chapter II. See Page II-50 and Table II-18.
1.13	Additional data concerning user benefits accruing from energy consumption savings is given in the Energy section of Chapter II. See Pages II-113 through II-117.

RED LINE SUMMER STUDY (Continued)

Paragraph Number

Response

1.14

The street widenings referenced on Page VII-26 were proposed for the intersection of Mystic and Chestnut Streets to accommodate easier movement into the previously proposed Russell Common Parking Garage. Since this proposal has been dropped from the Project, these improvements are no longer recommended.

As can be seen from Figure VII-5 and Figure VII-6, which show existing and proposed street widths, the only change in street width that is recommended is on Mystic Street within the existing island area. This is required in order to provide the required number of lanes for the through movement from Pleasant Street to Mystic Street.

The proposed signal timing and cross-street tunnels for the Red Line Station would provide adequate means for pedestrian crossing.

The traffic improvements proposed for the Massachusetts Avenue/Mystic Street intersection did not propose any street widenings. Lane channelling and lane realignment were the only proposals made.

1.15

On pages II-56 through II-59 of the Final EIS, firms that are dependent on the Lexington Branch for rail freight service were identified. Approximately 650 cars per year carry supplies to these firms. Assuming three to four truckloads per freight car, approximately 9 trucks per day would be required to supply these firms with the elimination of the Lexington Branch. This increase in truck traffic is not significant when compared to present traffic volumes.

1.16

The base traffic volumes used in our analyses were 1973 figures obtained from the TOPICS program. The 1973 figures were then factored to obtain the estimated traffic.

RED LINE SUMMER STUDY (Continued)

<u>Paragraph Number</u>	<u>Response</u>
2 Parking Garage	The text of the EIS has been thoroughly re-edited to delete any reference to a parking garage at Arlington Center.
3 Right-of-Way	The Red Line Extension to Arlington Heights has been re-engineered for a tunnel/cut-and-cover section through all of Arlington. The transitway would be underground through the entire town.
4 Transit as an Alternative to Parking	<p>All text has been corrected to reflect a Project to Arlington Heights. All costs and benefits have been recalculated based on a project to Arlington Heights. The text on Pages II-32 and II-33 has been changed to reflect Arlington Heights as the terminus.</p> <p>The BTPR definition of <u>Outer Ring</u>, as it appears on Page I-2, does not indicate that the EIS is for a Red Line Terminus at Route 128 but it merely defines the outer ring being within the 5.5 and 11 mile radii from the State House.</p>
5 Parking	<p>The Authority will explore different possibilities for attracting new transit riders through automobile disincentives. However, most of the automobile disincentives proposed are out of the direct control of the Authority. Only those related to access and use of the proposed parking garages can be initiated by the Authority. Probably the most successful automobile disincentive that the Authority can initiate is to increase the attractiveness of rapid transit by improving service and the quality of rolling stock. Many present ongoing Authority programs, such as station modernization, fleet modernization, and improved feeder bus service are aimed in this direction.</p> <p>Automobile disincentives such as requiring two or more occupants per vehicle to gain admittance to the station parking garages or reduced parking rates for those cars with two or more persons would discourage single occupant vehicles. The effects of these disincentives on transit ridership and station area traffic congestion will require further analysis and MBTA</p>

RED LINE SUMMER STUDY (Continued)

Paragraph
Number

Response

policy review during Pre-grant Engineering.

6
Alignments

The entire Project would be in an underground tunnel through Arlington.

6
Alternative to
the Automobile

The comments on traffic volumes along the Southeast Expressway and the Bay Bridge Avenue are based on historical commuting habits. These habits will undoubtedly change in the future with fuel and energy becoming more scarce. The Red Line Extension represents a project whose life will extend into the next century. Benefits accruing from the project in terms of automobile diversions on opening day may not look significant, but accrue these benefits over a period of 50 to 75 years at an increasing rate and they will become quite significant.

6
Transit Usage

Travel time savings for the Project have been calculated for an extension to Arlington Heights.

Table II-7 indicates the travel time savings to Route 128, the long-range terminus of the Red Line. However, the short-term terminus would be at Arlington Heights.

The following note is included in all appropriate tables including Table II-7:

NOTE: This Environmental Impact Statement is for a project to Arlington Heights. The extension from Arlington Heights to Route 128 would be part of a future improvement and covered by a separate Environmental Impact Statement.

6
Arlington Heights

The Arlington Heights Station and Parking Garage is planned as a local facility and not as a regional facility.

RED LINE SUMMER STUDY (Continued)

<u>Paragraph Number</u>	<u>Response</u>
6 Alternatives Considered	The recommendations and conclusions of Phase I of the Minuteman Area Transportation Study have been included in Chapter VIII of the Environmental Impact Statement. See page VIII-10.
8	The Red Line Extension project will not impact any historic structures. See Exhibit O (Letter of Agreement), Appendix G.
9	With the project now being in a tunnel through all of Arlington, the potential for vibrations to impact any historical structures in Arlington has all but been eliminated.
10 Arlington Center Station	Construction of the Arlington Center Station would take about 24 months to build. However, surface disruptions would only occur for about 6 months. From there on, most construction activities would take place below ground under decking or planking or within the tunnel box itself.
11	The Red Line Extension project is planned as a regional facility to serve the needs of the entire northeast corridor.
12	There is no evidence to show that the Red Line Extension will have a profound negative impact on the natural and historical environment of the Town.

FILE

MA. 23. 9008

January 25, 1977

ARLINGTON HEIGHTS
TRANSPORTATION
ADVISORY GROUP
c/o Jacqueline Harrington
52 Kenilworth Road
Arlington, Massachusetts 02174

Mr. Robert E. Patricelli
Administrator
Urban Mass Transportation Administration
U.S. Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Patricelli:

Enclosed is the report of the Arlington Heights
Transportation Advisory Group in regard to the Draft
Environmental Impact Statement for the Red Line Extension -
Harvard Square to Arlington Heights, Boston,
Massachusetts - Project MA -23-9008.

Very truly yours,

ARLINGTON HEIGHTS
TRANSPORTATION
ADVISORY GROUP

Jacqueline Harrington, member TAG
Jacqueline Harrington

JH/ljs

enclosures

REPORT OF THE
ARLINGTON HEIGHTS TRANSPORTATION ADVISORY GROUP

in re

DRAFT ENVIRONMENTAL IMPACT STATEMENT

RED LINE EXTENSION -
HARVARD SQUARE TO ARLINGTON HEIGHTS

BOSTON, MASSACHUSETTS

MA-23-9008

- (1) On April 23, 1976, the Arlington Heights Transportation Advisory Group submitted a statement regarding the Environmental Analysis Report on the Red Line Extension which had been published by the Massachusetts Bay Transportation Authority (MBTA) in February, 1976.
- (2) Responses to the concerns expressed in that statement were made by the MBTA and they are acknowledged in the Draft Environmental Impact Statement captioned above, which was published by UMTA in November, 1976.¹
- (3) Because acknowledgement of our concerns, unaccompanied by any change in the project description, does not assuage these concerns, we now resubmit our original statement and expand upon it. The statement and the MBTA response to it are attached to this report.
- (4) In the Environmental Impact Statement, as in the Analysis which preceded it, Arlington Heights is designated as the final step of the project and the language which distressed us previously is repeated, viz., "Arlington Heights is the preferred terminal based on potential ridership", Vol. II; Ch. IX-31, and, "ridership projections indicate that, while the market area beyond Arlington is significant, it may not justify the expense of third-rail rapid transit", Vol. II; Ch. IX-34. The preliminary report of the Minuteman Area Transit Study,² for which we have been so long waiting, appears to reinforce these conclusions. We have not, however, had time to evaluate the report, except as individuals, because it was published on January 17, 1977.
- (5) The language cited above is in conflict with the statement on pages VIII-33 and VIII-34 of Vol. II, i.e., "The recommended station plan was formulated as a line station to serve the Arlington Heights residential area, and not

¹Volume II, pp. 4-6-25-38-49.

²Minuteman Area Transit Study - Executive Summary Phase I Feasibility Report, January 17, 1977.

as a Red Line Terminus". Of what value is such a statement if there is no real possibility of the line's being extended beyond Arlington in the foreseeable future? Whatever the definitive term used, the place at which construction of the line ceases will be the terminus.

- (6) Therefore, we reiterate. Arlington Heights should not be the final stop of the Red Line -- for the reasons cited previously and for the following additional reasons: 1) topography, and 2) absence of any policy on the part of the planners regarding automobile access to stations, particularly park/ride access.
- (7) 1. As noted in the EIS, "Arlington Heights is located in a very narrow portion of the Mill Brook Valley; residences line the hills to the north and south. Only a limited amount of level land was available for commercial and industrial development. The area was not suited to become a focus of regional importance . . ." Vol. II; Ch. VIII-41.
- (8) We suggest that, because of the hills, some of the people who are projected as walk-in patrons of the station will, in fact, drive in, thus adding to the projected increased traffic volumes.
- (9) 2. The following references have been excerpted from the EIS to support our contention that no automobile access policy exists.
- a. "A Red Line Station at Arlington Heights would result in a slight decrease in daily and peak-hour traffic volumes due to the diversion of auto trips to transit; however, this would be offset by an increase in vehicular traffic attracted to the station." (Vol. II; Ch. VII-26)
 - b. More park/riders would be attracted to a terminus than to a line station (Vol. I; Table II-14, p. II-42) and more buses would be required to serve a terminus than a line station (Vol. I; Table II-16, p. II-47).
 - c. The calculation of parking requirements at stations is based on an average occupancy of 1.2 passengers per automobile (Vol. I; Table II-17, p. II-46).
- (10) We submit that, if current plans are acted upon, part of the attraction of the transit stations will be the garages. And, that it does not make sense to plan a rapid

transit system which is supposed to present an alternative to the automobile; alleviate traffic congestion in the Central Business District (Boston), and at Harvard Square; and reduce auto emission (thereby promoting cleaner air), and then to provide parking spaces for patrons of this system which will, by its very existence, encourage automobile usage.

- (11) We would like to propose that a traffic analysis based on the effects on transit ridership and street congestion of restricting access to any parking garage or lot to vehicles containing two or more occupants be undertaken and that the analysis to which we objected in our last report be abandoned as a planning tool. See: Vol. II; Ch. VIII-25.
- (12) The above-cited analysis proposes a method of accommodating additional transit riders which would deprive the people of Arlington of parking spaces on Park Avenue and makes no mention of the need to replace these spaces elsewhere. The references to the MBTA lot on the south side of Massachusetts Avenue are not specific on this point. (Vol. II; Ch. VIII, pages 38 and 39)
- (13) We are not unmindful of the projected auto diversions which are presented in the EIS on page II-33 of Volume I, but point out that they are based on the existence of a Route 128 terminal, with parking for 2,000 cars (Vol. II; Ch. II-42). It is clear that these figures would be reduced with an Arlington Heights terminus, and the resulting numbers outweighed by the adverse effects upon our community of the additional traffic referred to above.
- (14) If the fuel shortages predicted for the future occur and if, as it is alleged in the EIS, on page II-37 of Volume I, extension of the Red Line would "make the policy of auto disincentives in the CBD more practicable", there may be a greatly reduced need for parking facilities. In any case, we assert that auto disincentives should be a part of the planning process before any garages are designed, not after they are built.
- (15) Our final comment concerns the alignment of the project. The EIS states that, "the proposed project, creating a depressed alignment through the western half of Arlington . . . would be compatible with surrounding development with the addition of lightweight decking at certain critical areas." Vol. II; Ch. VIII-37. These "critical" areas, in a segment of 10,850 feet, are: a short segment west of Forest Street; between the bleachers of the Arlington

- (16) High School and Summer Street; and two areas where decking is considered "optional", i.e., adjacent to the Brattle Court Apartments and also between Mill Street and the Warren A. Pierce playground.
- (17) The EIS acknowledges that "seven public parks and recreational areas in northwestern Arlington lie within the study corridor", Vol. II; Ch. VIII-51. Decking is not proposed for these areas, but rather "a linear park or pedestrian connection on the side of the line nearest to residential and recreational Uses", Vol. II; Ch. VIII-37.
- (18) This Task Force never approved the alignment which appears in the Environmental Impact Statement. We met only eight times between March and August of 1976, and most of our meetings were devoted to discussion of the station and garage alternatives. Such information as was presented to us regarding comparative costs of a decked vs. a depressed alignment was characterized as preliminary and was never studied in depth. The only votes we ever took as a Task Force were taken at the meeting of August 6, 1975 (minutes attached). The alignment of the station was voted upon,¹ but not that of the segment.
- (19) The alignment of the proposed rapid transit extension is of great importance to the people of Arlington. The option of decking the entire line through Arlington should not be foreclosed, solely on the basis of its increased cost, since the people of Arlington will be greatly harmed if the analysis of the effects of construction and of the operation of the transit system in the Draft Environmental Impact Statement should prove to be faulty.

¹With the majority favoring an underground station.

STATEMENT OF THE ARLINGTON HEIGHTS TRANSPORTATION ADVISORY GROUP

The Arlington Heights Task Force wishes to insert in the Environmental Analysis Report their conclusions in regard to the Red Line Extension:

- I. Arlington Heights should not be the final stop of the Red Line.
- II. Until the information from the Lexington Area Transit Improvement Study is made available for review, no decision to locate a transit stop and parking garage in Arlington Heights should be made.

Several factors have prompted us to make this statement. Foremost among them are that Arlington Heights appears as the last stop of the project in the Environmental Analysis Report and that the consultants have stated, on page III-31, that "of those alternatives considered in detail in the Study, Arlington Heights is the preferred terminal based on potential ridership", and on page III-34, "...Ridership projections indicate that while the market area beyond Arlington is significant, it may not justify the expense of third rail rapid transit." We are concerned that these statements conflict with another, on page III-31, which reads, "For purposes of project definition, Route 128 was considered the ultimate terminal point. ...This is in response to policy positions established by the Cities of Cambridge and Somerville and the Town of Arlington", and make it appear pro forma.

We submit that there are criteria for determining the suitability of an area as a transit terminus which Arlington Heights does not meet. The proposed site, the current MBTA bus yard, is in a fully developed area, neither on nor adjacent to a major highway. It is, in fact, directly accessible only from Massachusetts Avenue, Arlington's main street. There are no alternate routes. Since the volume of traffic attracted to an end-of-the-line stop is projected to be significantly greater than that to an intermediate stop, the pressures on local streets thus created would be intolerable, posing a threat to the safety of our residents. Our air quality, already characterized as "substandard" (page IV-104) would deteriorate further as a result of increased congestion.

In reference to point II, above:

The proposed site in Arlington Heights was decided upon during the BTPR because it was already the property of the MBTA and because it abuts the railroad right-of-way. These facts do not lead to the conclusion that it is the only possible site or even the most desirable one. Because of the lack of information about the area west of Arlington, no other sites have yet been considered. This is why we assert that the proposed location will have to be re-evaluated at a later date.

We also wish to refer in this statement to one major disagreement between the Task Force's findings and the recommendations of the consultant which appears in the report; i.e., the issue of parking provisions. On page XI-25, in the section entitled Mitigating Measures, the following conclusion appears:

"The provision of additional parking would maximize ...ridership benefits and minimize the adverse effects of on-street parking. ...If some peak-hour congestion and delay (level of service D) would be acceptable, a total of 350 additional parking spaces could be provided. A 500 to 700 space garage at Arlington Heights would minimize the excess park-and-ride demand and the associated adverse effects."

This conclusion is wholly at variance with our recommendation. The figure of 350 spaces was intended as a maximum figure and was arrived at with reluctance, because we doubted the accuracy of the ridership figures in the absence of the Lexington Study information. We based our recommendation of a maximum facility on three criteria -- the mass of the structure, the maintenance of free-flowing traffic at the Park Avenue/Mass. Avenue intersection, and the disputed ridership figures, they being the only ones available. Level of service D at the intersection was not acceptable to us, since congestion would likely produce increased air pollution, which the transit project is meant to reduce. We were much concerned with the problem of excess park-and-ride demand but, when we were informed that there would be an excess whether 100 or 700 parking spaces were provided, we decided to select from among the alternatives presented to us a garage which would meet the standards cited above. We also recommended that the MBTA parking lot on Massachusetts Avenue, opposite the proposed station, be transferred to the Town of Arlington, to be used as an off-street parking area for local business people and their customers, and that more creative means of encouraging transit ridership than the provision of parking spaces be explored.

The Arlington Heights Task Force was faced with many complex issues during the period of our deliberations. We were asked to make choices without benefit of critical information. In addition to the lack of data concerning Lexington's participation in the project, there was the matter of ridership rejections. An origin and destination study done in 1963 may provide adequate ridership figures for areas already fully developed, but because the area west of Arlington has expanded greatly in the intervening years, there can be no clear picture of ridership potential in these communities until a study based on current realities is undertaken. We are, therefore, not prepared to decide on the advisability of locating a transit facility in Arlington Heights until the kind of information on which a rational decision can be based is available.

RESPONSES TO COMMENTS
FROM
ARLINGTON HEIGHTS TAG

- . The Task Force was in disagreement with the EIA findings regarding additional parking at Arlington Heights, stating that 350 spaces should be considered as an absolute number.

The above analysis of the effects of increased garage capacity was conducted to ascertain the carrying capacity of the station area street network. It should be understood, however, that the proposed 350 space garage was considered to be an absolute maximum by the Arlington Heights Transportation Advisory Group in light of the excess mass of a larger facility, increased traffic congestion and air pollution, and lack of any data from the Lexington study. The Group also indicated that Level of Service D would be unacceptable at the Park Avenue-Massachusetts Avenue intersection.

- . Since the volume of traffic attracted to an end-of-the-line stop is projected to be significantly greater than that to an intermediate stop, the pressures on local streets thus created would be intolerable, posing a threat to the safety of our residents.

Preliminary analyses have indicated that traffic engineering improvements can be made at the intersection of Massachusetts Avenue/Park Avenue, and along Massachusetts Avenue near the proposed station entrance which would more than adequately accommodate the expected additional traffic. These improvements are outlined on DEIS page VIII-25

- . Page 2, para. 4 - "The Arlington Heights Task Force was faced"

The travel forecasts for the Red Line extension were based on a methodology which utilizes not only travel patterns recorded at the time of the major survey, but also takes into account all of the land use and activity changes to the present year and the forecast year. What results is not a reconstruction of travel patterns between activities which existed in 1963, but rather a simulation of travel flows between the land use activities of 1980 and 1990. Since the major studies of the 1960's, no major American city has undergone the multi-million dollar expense of

conducting a second origin and destination survey. Rather, these cities attempted to refine their forecasting procedures based on computer-based simulation process. This is consistent with what was done in this study.

Short of repeating a major home-based origin-destination survey, there are methods available to obtain a better understanding of a limited area. Many smaller-scale data sources such as on-board surveys and post-card returns at major interchange points can be assembled for comparison with simulated patterns and (to a lesser extent) macro-scale data. What results is a reasonable reconstruction of present day travel patterns. The MBTA is now undertaking such a manual cross-checking of available sources as part of the Minuteman Area Transit Study. The MBTA agrees with the Task Force's position that the final decision on an Arlington Heights station should await the conclusion of the Minuteman Area Study.

MINUTES of the Arlington Heights Task Force meeting

HELD on Wednesday, August 6, 1975

A meeting of the Task Force was held to provide an opportunity for the group to analyze information submitted to date by the consultants and to establish preferences on station criteria. With seven members present, a vote was taken to determine Task Force preference for the station. Concerning a linear park, six voted affirmatively for the linear park concept with one member abstaining. The underground versus at-grade station configuration was voted on with the following results:

	<u>yes</u>	<u>no</u>	<u>abstain</u>
underground	5	1	1
at-grade	2	4	

Joint development received seven votes against. Six members voted for an open brook with one member abstaining. The group was split in considering the appropriate size of the station. Each expressed a preferred size and related concerns as follows:

1. In favor of alternative A-6 with provisions for merchant/employee and customer parking.
2. In favor of a garage of around 600 spaces with provisions for merchant/employee and customer parking.
3. In favor of a minimum* size garage in order to assure adequate traffic flow in Arlington Heights--more information on the Lexington segment is required before any final decision can be made.
4. In favor of a minimum size garage providing there is some way to assure space for merchant/employee and customer parking -- also request that the next part of the study analyze in some depth the impact of a station and garage on the commercial enterprises in the Heights.
5. In favor of a minimum size garage but the information from the Lexington study must be available prior to any final decision making.
6. In favor of approximately 300 spaces--concern was expressed over traffic in the Heights - no kiss & ride on Massachusetts Avenue - interested in the acquisition of the MBTA lot south of Mass. Avenue for local use.

* intended to be approximately 100 - 150 spaces

7. In favor of approximately 350 spaces with acquisition of the MBTA lot south of Mass. Ave. for local use.

The group agreed to eliminate alternative #1 (the BTPR alternative) from any further investigation. They generally were in favor of alternative 6, but with several changes--particularly, placement of kiss & ride inside the station area rather than on the Avenue. The group then discussed the possibility of acquiring the south MBTA parking area by purchase or land trade.

The group is dealing with a conflict situation wherein there is a desire to insure:

1. A high level of service for traffic flow through the Heights by limiting available parking spaces
2. No overflow of parking onto side streets by satisfying parking demand up to 600 cars
3. Consistent availability of parking for merchants, employees and customers and prevent conflict of transit and local user parking.
4. Minimization of parking garage visual impact on the Heights.
5. Availability of the Lexington study information prior to any final decision making for the Heights.

Suggested garage size ranged from 100 to 600 spaces. This very wide range is a reflection of the conflicts faced by the Task Force in trying to deal with the 5 objectives stated above. The conflicts were not resolved by the end of the meeting, but it was agreed that a clearer presentation of the ridership data in descriptive form would help them resolve the problem.

Another conflict is that concerning the underground station and the open brook. It was stated previously by the consultants, but not emphasized in the minutes, that an underground station would not include Mill Brook flood improvements as part of the station development. An at-grade station would require such improvements since the station would be vulnerable to flooding conditions, while underground it would be protected from flooding. Therefore, by opting for an underground station, the town would be losing some significant improvements done as part of the station and Red Line work.

This information was relayed to the ARB and the consultants at the August 11 ARB meeting with DeLeuw, Cather consultants to the MBTA.

The August 12 meeting of the Heights Task Force was cancelled due to lack of attendance. At the next meeting it will be necessary to deal with the conflicts as stated above. The group asked for a clearer description of the ridership data and the parking study done by the DP&CD. With this information the Task Force will be asked to further refine the criteria for the Arlington Heights station.

GFB/aa

ARLINGTON HEIGHTS TRANSPORTATION GROUP, January 25, 1977

Paragraph
Number

Response

6, 7, 8, 9, 10
Arlington Heights
Station Area

Because of the hills to the north and south of the Arlington Heights station site some of the estimated 650 daily walk-in patrons may elect to kiss-and-ride or park-and-ride. Assuming that 25 percent of this number would not walk, the increase in traffic volume during the peak hour would be about 30-40 vehicles.

11, 12, 13
Automobile Access

A station and small parking garage at Arlington Heights would be an attraction for additional automobile trips to the area. However, these trips would be short haul, local trips made mostly by Arlington and Lexington residents. Overall, regional traffic and long haul, commuter through trip traffic would be reduced with a net decrease in vehicle miles travelled (VMT).

The reduction in VMT due to a shift in the base for these calculations from Lexington 128 to Arlington Heights is only slight. See page II-37 for exact numbers and pages II-116 for an analysis of fuel savings.

14
Automobile
Disincentives

See responses to Red Line Summer Study and Arlington Heights Transportation Advisory Group on pages 220 and 228 of this volume.

15, 16, 17
Decking

All open cut sections previously proposed for the Arlington Center to Arlington Heights line segment have been eliminated from the Project. This section would be completely underground in tunnel/cut-and-cover.

18, 19

The Authority recognizes that there are still many concerns and apprehensions about the proposed Arlington Heights Station and Parking Garage. During the preliminary engineering phase for the design of this station and garage, close coordination will be maintained between the Authority, our design consultants, the planners of Arlington and the townspeople living in the Arlington Heights Area. Every effort will be made

ARLINGTON HEIGHTS TRANSPORTATION GROUP, (Continued)

Paragraph
Number

Response

(Cont.)

to design a facility which does not: worsen traffic conditions, negatively intrude on the urban setting, or result in any degradation of noise, air, or water quality levels in the area. Conversely, it is anticipated that though proper planning and coordination a station and garage facility can be designed that will increase the local parking supply in the heights area, reduce traffic congestion (even with a net increase in volume), improve the hydrological conditions of Mill Brook, and provide additional landscaped and openspace areas for future development by the Town of Arlington. Above all, 3 minute travel times between Arlington Heights and Arlington Center will become a reality as will the potential for development of a landscaped open space system through the Town. In the next century Massachusetts Avenue may be replaced as the major travel corridor in the Town by this combined transitway/pedestrian system.

MA-23-9008

FILE

See

EAST ARLINGTON RESIDENTS
P.O. Box 39
Arlington, Massachusetts
02174

JAN 31 1977

UCA-30

January 24, 1977

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, D. C. 20590

Re: Draft Environmental Impact Statement, Red Line Extension
Harvard Square to Arlington Heights, Boston, Massachusetts, MA-23-9008

Dear Mr. Benjamin:

- (1) On behalf of the East Arlington Residents' Association, I am pleased to submit the following comments to your office relating to the Draft Environmental Impact Statement in the above matter.
- (2) The East Arlington Residents is a neighborhood association (EAR) which was formed approximately ten years ago in response to the need of local citizens who felt that an organized group with a spokesman would be effective in dealing with a variety of problems at the municipal level. The Association is well-represented on Town boards and at the Town Meeting. It has had continuous representation on the Alewife Task Force in connection with the Red Line extension. The East Arlington Residents have a town-wide membership policy, but its primary purpose is to act as a forum for local citizen input.
- (3) Members of the Executive Board of the East Arlington Residents' Association (the Association) have reviewed the Draft Environmental Impact Statement (DEIS). The points to be discussed have been brought to the attention of the membership through reports at Association meetings.

"The major adverse impacts of construction (of the Red Line) would be air and noise pollution, traffic disruptions, maintenance or relocating of utilities, siltation and erosion, effect on existing structures, disposal of excavated materials, spillage, effects on groundwater table and possibility of encountering an underground stream." (Vol. II, VI-95)

[4] With the exception of "encountering an underground stream," a phenomenon which most laymen are unfamiliar with, it is safe to say that all of the impacts set forth in the above quotation from the DEIS will be magnified in East Arlington during construction of the Red Line. In addition, there will be problems from the construction of the proposed Department of Public Works (DPW) road scheme (VI-23,24,30,35,41,69,95) that have not even been addressed as yet.

[5] VI-45 states that "The East Arlington neighborhood is...a long established, stable area... . Portions of it are in or near the floodplain and flooding has long been a serious problem. Traffic on Lake Street is also an increasingly serious problem." The DEIS goes on to say, "The transportation and related improvements will indirectly benefit the neighborhood if they help to bring about solutions to the area's flooding problems." What assurance does the East Arlington neighborhood have that these benefits will accrue? A reading of the DEIS shows it to be full of "ifs". This type of reasoning does little to relieve the citizens of worry about the "coming of the Red Line."

[6] . Page 2 of the Letter of Transmittal from Robert R. Kiley, Chairman of the Massachusetts Bay Transportation Authority (MBTA) to Mr. Robert E. Patricelli, Administrator of the Urban Mass Transportation Administration (UMTA) which is set forth in the "Advance Copy" of the Application for a Capital Grant, states: "The Authority represents that the data submitted to the Department of Transportation

are true and correct." If this is the case, the Town of Arlington will suffer severely if the combined rapid transit and road project is not handled in an extremely sensitive manner.,

- [7] The particular concerns of the East Arlington Residents' Association (the Association or EAR) are: potential flooding, increased traffic and carbon monoxide levels, noise and vibration, turnback and storage track, effect on the wildlife reservation, possibility of dual freight and transit, maintenance of parkways, design of adjoining roadways and the bus feeder system. Short-term effects of concern are the temporary traffic patterns during construction, disposal of excavated materials and fear that the potential job opportunities might take precedence over good design.
- [8] "The Alewife Brook Reservation south of Route is mostly open floodplain"(VI-27), and "the flooding problem has been aggravated by the high degree of development in the basin. Surface runoff is rapid because of the impermeable urban surfaces and because there is little vegetation to absorb and retard surface flow" (Vi-74).
- [9] The DEIS states that the Amelia Earhart Dam has a pumping system that is designed to maintain the level of the Mystic River. However, East Arlington, especially that section along Alewife Brook from the Dewey and Almy Circle down to the Mystic River, has been subject to severe flooding during past storms. It is doubtful that any pumps can be effective during the course of a hurricane. Further encroachment on the floodplain will increase the danger of heavy flooding in this area.
- [10] Improperly maintained culverts will contribute to any flooding problems and the Association feels that provision for regular inspection and maintenance of culverts should be addressed in the Final EIS.

- [11] The DEIS indicates that no complete soils analysis has been made along the extension route (II-87, II-148, II-151, VI-29). The Association feels that this analysis should be included in the final EIS. The types of soil encountered will be one of the factors determining cost of construction, types of construction, and what type of disposal problem may be encountered. Experience in the past in the East Arlington area has been that the digging of any trench and leaving it open during construction is dangerous. The high water table causes a "soupy" condition. The danger to both construction workers and other people moving in and around the excavation is great. Material dredged from Spy Pond and Little Pond during the reconstruction of Route 2 was disposed of in the vacant land on belonging to the Mugar Group. Because the contractor did not use elementary precautions, such as erecting a fence in the beginning of the disposal project, children were caught in the muck and had to be rescued.
- [12] The disposal of other construction materials is also of concern to the Association and it is hoped that the final EIS will indicate the sites for the disposal of these materials.
- [13] "Alewife Brook Parkway is heavily utilized by vehicles on a regional basis, principally as a major thoroughfare" (VI-67). The Association would like the final EIS to give details about how many more cars and buses will be attracted to the Alewife station. The pedestrian and traffic conflict at the intersection of Massachusetts Avenue and Alewife Brook Parkway is discussed at VI-57,58. No solution to this conflict is offered. Because of the proximity to the Alewife station and the increased traffic that will occur on the Parkway, the Association feels that this conflict should be resolved.

- [14] There is conflict in the DEIS regard buildings located in the "zone of influence" of noise and vibration from the operation of the Red Line. VII-9 states that, "All buildings within the zone of influence would require protective measures to minimize damage caused by settlement or vibration." II-13 states that "Certain buildings within the zone of influence of the tunnel may require protective measures." Which is it? All or Some? What is underpinning and how is it set in place? Will removal of vegetation and large trees contribute to the settling of buildings? This information should be included so a better judgment can be made as to the impact of the extension.
- [15] VI-92 indicates that "special vibration control trackwork would be provided... within 100 feet..." In East Arlington homes line the track on both sides from Thorndike Field to Lake Street, and on one side from Lake Street to Arlington Center. There is also a fair-sized apartment complex beside the track as it approaches Spy Pond. The right-of-way in this area varies from 60 to 75 feet in width. After construction, many houses would be within 35 to 50 feet of the nearest tunnel wall. Several garages would be less than 10 feet. The residents in this area are very concerned about impacts from passing trains and from construction work. The Association feels that these residents need to be given a more informative description of the impacts on their properties. This information should include safety precautions to be taken during the moving of utility lines.
- [16] The underground turnback and storage track planned along Thorndike Field has a potential for aggravating the flooding problems already experienced in this section. Although construction techniques are known (VII-9) that will allow the free passage of water, the technique to be used in the construction of this track has not been decided upon. The Association would like more details on the method to be used.

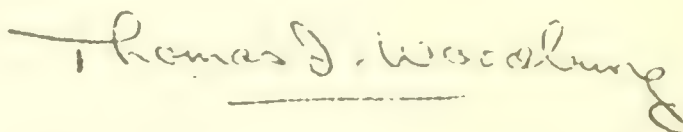
- [17] The Town has expressed a desire to have a linear park extend the length of the Red Line for the use of pedestrians and bicyclists. If the Interstate Commerce Commission (ICC) decides that the freight line cannot be abandoned (VIII-18), the linear park will be out of the question and the Town will be faced with a freight line over a subway line. What further impacts in terms of noise and vibration can be expected from this type of operation? Also, how many more trucks will be traveling the streets of Arlington as a result of abandonment of the freight line, if that happens?
- [18] The Alewife area contains a very delicate wildlife preserve owned by the MDC. The residents of East Arlington feel that this wildlife area is of prime importance and should be preserved in its natural state. (VI-66). Since little is known about the effect of noise on wildlife, the Association feels that great care needs to be taken so that this area is not disrupted. (D-7). "Any vegetation and wildlife displaced from the construction zone would be replaced" (VI-70) and the "stream would be diverted from the existing channel and then returned to the original streambed" (VI-70). How are these things accomplished?
- [19] The Association feels that the DPW should provide an Environmental Impact Statement relating to the so-called road improvements. Temporary roadways will be built during construction of the Red Line and permanent roadways will be proposed to be built to connect with the garage (VI-69, 1,6,16,17). What impacts will these roads have?
- [20] Throughout the DEIS continual reference is made to the need for coordination between agencies. No firm plan is proposed to implement this coordination.

1/25/77

[21] To fully address the impacts on East Arlington that are set forth in the DEIS would require a response almost as long as the DEIS itself. The concerns set forth in this letter only scratch the surface. Other groups have responded to the DEIS and it is hoped that matching the points brought out in each of these responses will be of benefit to the citizens of Arlington.

[22] The time for coordinated planning is long overdue. The Association hopes that good planning of the transit system, road system, development and open space needs will take place simultaneously.

Sincerely,

A handwritten signature in cursive script that reads "Thomas J. Woodbury". The signature is written in dark ink and is positioned above the typed name.

Thomas J. Woodbury, President
East Arlington Residents' Association

W/f

<u>Paragraph Number</u>	<u>Response</u>
4	These problems are discussed in MPDW's Environmental Overview Summary Update (EOSU) for the Route 2 Improvements. See Appendix J.
5	The Final Environmental Impact Statement re-addresses the long and short term impacts in the Alewife/Arlington sector and amplifies commitments to mitigate adverse effects. With respect to the flooding problems, a hydrology study of the Mystic River Watershed is already underway under the direction of the MDC and MBTA. This study will look at the problems at Alewife as well as other problems of the Watershed. Included in the Authority's plan for the Alewife Section is a storm-water runoff collection and retention to improve flooding conditions.
7, 8, 9, 10	<p>These issues are discussed throughout text. All these aspects will be addressed in greater detail during the Pre-grant Engineering phase. A continuous community liaison program will be developed to disseminate the findings to all concerned citizens and groups. Good design will be the primary objective.</p> <p>The major issues raised by these paragraphs will be addressed by the MDC Hydrology Study. The results of this study will be available for incorporation into the Red Line design.</p>
11, 12	<p>The complete soils analysis for the East Arlington segment of the Red Line project will be performed during the summer of 1977. This program will be in the depth required for final design. All the issues concerning the Association will be addressed and presented to the Association. This data will not be available for inclusion in the Final EIS. MBTA Standard Specification address the safety aspects.</p> <p>See Chapter II Disposal of Excavated Materials.</p>

EAST ARLINGTON RESIDENTS ASSOCIATES, (Continued)

Paragraph
Number

Response

13

The Traffic and Transportation section of Chapter VI has been expanded to include the latest traffic analysis for the Alewife Area. This new material comes from a draft report prepared for the Alewife Area for the City of Cambridge by their traffic consultant. See page VI-25.

A TOPICS Improvement Program is currently being implemented at the intersection of Massachusetts Avenue and Alewife Brook Parkway. This will help reduce vehicular conflicts at the intersection.

14, 15, 16

All structures within the zone of influence of noise and vibration will require some type of protective measures. Certain structures within the zone of influence of construction may require some type of protective measures. Underpinning is the lowering of the foundations of structure below the zone of influence. It is a tedious and expensive operation. It is the opinion of some geotechnical experts that it should be avoided if possible. On this project, especially in East Arlington, underpinning does not appear necessary. Buildings that require protection, can be protected by other methods such as cut-off walls. These are being proposed to protect the brick buildings in Cambridge. Removal of large trees should normally not contribute to the settlement of buildings.

Criteria has been selected for maximum levels of airborne noise and groundborne noise and vibration, both during and after construction. Appendix D has been expanded to address this issue. This criteria will be used in design development phases to determine the controls needed to mitigate undesirable effects. Particulars will be made available to concerned residents through community information procedures in the preliminary design phases.

EAST ARLINGTON RESIDENTS ASSOCIATES, (Continued)

Paragraph
Number

Response

Construction methods for handling public utilities in the work zone are well established and have been successfully employed in large civil projects for many years and in situations exceedingly more complex than in the Arlington Sector of this project. No particular difficulties are foreseen.

The specific construction techniques in this area will be presented to the Association during the Pre-grant Engineering phase. For discussion of the issue, see Chapters II and VI. See pages II-147 and VI-104.

See response to Red Line Summer Study comment on page 221 of this volume.

17

See page 224 of this volume, Para. 1.15 and Para. 1.3.

18

Techniques for construction through the Alewife Brook Reservation are discussed on Pages II-147 and VI-117 of the Final EIS.

19

The Massachusetts DPW has prepared an Updated Environmental Overview Summary related to the roadway improvements proposed for the Alewife Area.

21, 22

Coordinated planning has continued beyond the EIS Stage as evidenced by the Pre-grant Engineering work currently ongoing for the section from Harvard Square to Alewife. This same coordinated effort will continue during the preliminary design phases for the Arlington section.

c/o Dr. Herbert Meyer
276 Massachusetts Avenue
Arlington, MA 02174
January 24, 1977

Mystic River Watershed Association, Inc.

Mr. Robert E. Patricelli, Administrator
Urban Mass Transportation Authority
Department of Transportation
Nassif Building
400 7th Street, SW
Washington, D.C. 20590

Project: MA - 23 - 9008

Dear Mr. Patricelli:

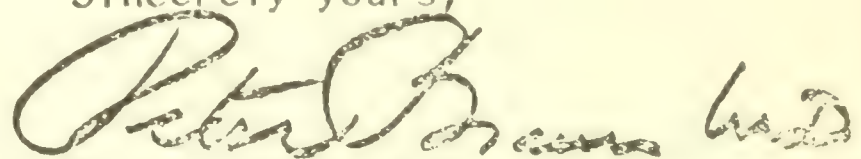
The Mystic River Watershed Association (MRWA) submits to you its comments on the Draft Environmental Impact Statement (DEIS) MA-23-9008 for the Red Line Extension from Harvard Square to Arlington Heights, Boston, Massachusetts, of November, 1976.

The MRWA is concerned specifically with sections of the extension which cross through the Mystic River watershed, i.e., the sections near Alewife Brook. The Association is concerned with the protection of the environment as well as the social and economic well-being of the Northwest subregion. These concerns are shared by the other metropolitan watershed associations, namely, the Charles River Watershed Association, Lake Cochituate Watershed Association, North & South Rivers Watershed Association, SuAsCo Watershed Association and the Neponset Conservation Association, and by the Massachusetts Audubon Society, Inc.

The MRWA was represented on the Boston Transportation Planning Review (BTPR) Working Committee from 1971 to 1973. It is now represented on the Alewife Task Force (ATF), which was created by the Metropolitan Area Planning Council (MAPC) in early 1975, and has participated in the ATF meetings since that time.

In our attached comments on the DEIS, we have presented much background information which should be of use to you in your own review of the DEIS.

Sincerely yours,


Peter Braun, M.D.
President, MRWA

ABBREVIATIONS

ATF	Alewife Task Force
BTPR	Boston Transportation Planning Review
DEIS	Draft Environmental Impact Statement
DOT	U.S. Department of Transportation
EAR	Environmental Analysis Report
EOTC	Executive Office of Transportation and Construction for Mass.
4(f)	Section 4(f) of the 1966 DOT Act as amended
JRTC	Joint Regional Transportation Committee
MAPC	Metropolitan Area Planning Council
MBTA	Massachusetts Bay Transportation Authority
MDC	Metropolitan District Commission
MDPW	Massachusetts Department of Public Works
MRWA	Mystic River Watershed Association
UMTA	Urban Mass Transportation Authority



Mystic River Watershed Association, Inc.

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT
RED LINE EXTENSION, HARVARD SQUARE TO ARLINGTON HEIGHTS

MA-23-9008

I. BACKGROUND

The Draft Environmental Impact Statement (DEIS) is the product of the current planning study by the Massachusetts Bay Transportation Authority (MBTA) and its consultant DeLeuw, Cather. It relies to a large degree on the previous Northwest Corridor Report (referred to as the Red Book) of the Boston Transportation Planning Review (BTPR). The report concluded with three alternative proposals for the location of the Alewife station on the Red Line (RL) extension which it designated with the letters A, B and C. One of these options, A, was eliminated when the current alignment through Davis Square was decided upon. The location of station site B is southeast of Route Two, at the Dewey-and-Almy Circle, and site C is northeast of the Circle.

Some of the differences between station locations B and C, according to the Northwest Summary of the BTPR, pages 20-21, are the following:

Location B has access from all three road improvement options; is most flexible for future development options; and has good walking access from Rindge Avenue. On the other hand, it causes unavoidable environmental impacts for access ramps and requires the most environmental impact offsetting measures.

Location C has the fewest 4(f) conflicts and the least environmental impact. It also causes the displacement of the fewest businesses. W.R. Grace's manufacturing area is the only one affected, with about 105 employees. (In addition, MRWA has learned that W.R. Grace is considering the phasing out of its manufacturing operations at Alewife.) Disadvantages relate to its proximity to a residential area in North Cambridge and more difficult access to the proposed industrial triangle.

The MBTA started the consultant selection process for the RL Extension environmental impact statement contract in the fall of 1974. The MRWA's effort to participate in the consultant selection process was frustrated by dilatory tactics of the MBTA staff. Thus, environmental members of the Joint Regional Transportation Committee (JRTC) requested on October 9, 1974, the assistance of that body to obtain a meeting with the selected consultant DeLeuw, Cather to ascertain that he understood the scope of the project he was to undertake.

Eventually, a meeting between the Coordinator of the JRTC, the representative of the MBTA, and the JRTC members on the Northwest Corridor Subcommittee was held on October 29, 1974. The following items were discussed: coordination of the station related projects with regional landuse and transportation planning; completion of the still unpublished chapter on the Northwest arterial network; the unacceptable high level of traffic on the Alewife Brook Parkway; coordination of the Massachusetts Department of Public Works (MDPW) roadway project with the MBTA project; a "joint-development" urban design planning approach according to the Unified Work Program Element 63701 (1974 version); participation of the Metropolitan Area Planning Council (MAPC) and the Metropolitan District Commission (MDC) because of the closeness of the station site to two other towns, Belmont and Arlington, and to the Alewife State Reservation; and the requirement to complete the preparations mentioned above, before the contracts with the MBTA and MDPW consultants at Alewife Brook were finalized.

Similar items were discussed at the follow-up meeting of the Red Line Working Committee of November 7, 1974. One of the agreements reached was the appointment of a neutral chairman for the Alewife Task Force (ATF) by the MAPC to assure an open and participatory process.

B. The Alewife Task Force

The ATF held its organizing meeting on March 12, 1975, with Lawrence Susskind, Professor of Urban Studies at MIT and member of the MAPC Executive Committee, as chairman. The Massachusetts Secretary of Transportation attended the meeting and requested that the ATF accept as a given the choice of station site B. Neither the chairman, the consultant, nor most members of the ATF had any knowledge about the issues involved; thus, the decision was tabled until the next meeting. The MRWA representative suggested that the ATF should first make a comprehensive areawide study, before going into details of transportation facilities related to the station. However, the chairman yielded to the Secretary by ruling that the ATF should select the station site first to accommodate the Secretary's request. Thus, station site B was accepted by the ATF on May 21, 1975, under incomplete and erroneous assumptions. The ATF then agreed to take up next the comprehensive station area land use and regional planning;

7. again postponed it in favor of a new request by the Executive Office of Transportation and Construction for Massachusetts (EOTC) to select the size and location of a parking garage.

The ATF had stipulated that automobile traffic should not increase in the Alewife area; specifically, the already overburdened Fresh Pond and Alewife Brook Parkways should retain their parkway character. The MDC which controls them had made this limitation its top priority. Nevertheless the EOTC began a study of the parking garage and another independent, parallel study of the ramp and roadways. The number of parking spaces was computed without any previous detailed information of present and future areawide arterial traffic, future feeder bus service and expected additional parking requirements for the desired business development in the station area.

C. The Public Hearings

Three public hearings were held by the MBTA in March, 1976, to discuss the Red Line Environmental Analysis Report (EAR). As will be shown below, the testimony at the hearings was not utilized by the MBTA to improve the DeLeuw, Cather EAR when preparing the present DEIS.

The statement of the MRWA representative at the March 25, 1976, hearing in Cambridge pointed out that the intended commercial/industrial development may necessitate as many as 4000 to 5000 additional parking spaces and therefore the size of commuter parking had to be evaluated in the context of the overall area planning to prevent the overuse of the area by the automobile. (See Advance Copy of the DEIS, Response Volume, September 1976, page 11-26) The response of the MBTA on the same page denies that it was possible at the time to estimate these additional parking needs. However, the Land Use Subcommittee of the ATF had already issued a draft "Generalized Land Use Plans for the Alewife Area" in November, 1975, which arrived at a maximum total of 5,453 additional parking spaces needed for the development. Present estimates of the City of Cambridge traffic consultant agree with those earlier estimates. The MBTA response to our statement at the Public Hearing of March 25, 1976, is therefore incorrect. This example is typical of many other incorrect responses of the MBTA which we are omitting here for the sake of brevity, but which we will furnish upon request by UMTA. The deviation of its responses from the correct facts has been in all cases in the direction of playing down or questioning the veracity of the testimonies at those public hearings.

MBTA was also arbitrary in deciding what testimony would be included in the Response Volume and what responses would be made. For instance, the conclusion of MRWA's testimony on March 25, 1976, by Dr. Herbert M. Meyer, that planning of the Alewife area should be done carefully and jointly to realize its potential for a uniquely successful solution by which all, including the City of Cambridge, would greatly benefit was not responded to individually. The testimony referred to the United Work Program Element 63701 of 1974 as a good

blueprint. The MBTA responded to our comments by claiming close contact among the various agencies, coordination of all aspects, and comprehensiveness. All these assertions do not hold up under detailed scrutiny. At the end of his testimony Dr. Meyer proposed that the MBTA capital grant application at this time should only cover the section from Harvard Square to Davis Square, where no controversial problems remained and that the time be utilized to complete the Alewife EAR. MBTA did not respond at all to that major proposal in its Response Volume. The result was that this important conclusion of Dr. Meyer's testimony was suppressed in toto. (See Advance Copy, Chapter 2, Response Volume, pp. 19-29.)

After the hearings, UMTA recommended that the EAR be rewritten as a full environmental impact statement in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA). The tragedy is that UMTA has permitted the unsatisfactory Advance Copy of the DEIS of September, 1976, to be reprinted unchanged as the DEIS under UMTA's own name in November, 1976. None of the federal or state agencies reviewing the DEIS have had the benefit of the testimony at the Public Hearings, nor even of the MBTA summary of the testimony which was contained in the Response Volume of the Advance Copy since this volume was not included in the DEIS. The very participatory process which had been devised to prevent costly and delaying confrontations when the project was ready to go into design and engineering phases has thus been perverted into uselessness. One cannot rule out the thought that UMTA is in accord with the seeming attempt of MBTA to rush the incorrect and incomplete Advance Copy edition through the review process.

We asked the MBTA repeatedly for its responses to the comments made by our Association at the hearings so that we might have the opportunity to provide further meaningful comments for consideration in the preparation of the Advance Copy to the DEIS. The MBTA said that they could not grant our request until instructions had been given by UMTA. The MBTA representative told us next that UMTA had requested important changes and that we should wait until we could see the whole "package". But when the ATF met on October 7, 1976, the MBTA representative said that there was no hurry anymore and that we could complete and refine our review later because the ATF recommendations would not go to UMTA with the Advance Copy of the DEIS. Instead the upcoming DEIS would be a virtually unchanged reprint of the September Advance Copy and this reprint would be circulated among the federal agencies.

This delegation of significant input by the 3-C participatory process has taken place simultaneously with a relapse to that mentality which led to the debacle of the moratorium, the BTPR and the Governor's cancelation of the Inner Belt and the Interstate sections of I-95 North and South through the core of metropolitan Boston. We are hoping that UMTA will prevent another confrontation in the outer half of the Red Line Extension from Davis Square to Arlington and will provide the

unds for a restudy of the section of the extension. No delay in implementation has to ensue, since the work on the extension has to commence at the end of the present line at Harvard Square and it will take years to reach Davis Square. This time is far longer than the period required for the restudy by a competent consultant if he is relieved of any misconceived restraint and pressure for unnecessary short dead lines and participation is allowed to proceed without obstruction.

II. INADEQUACIES IN 4(f) SECTIONS

Section 4(f) of the 1966 DOT Act states that

"After the effective date of the Federal-Aid Highway Act of 1968, the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless: (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use."

The Federal Aid Highway Program Manual Transmittal 107 of December 30, 1974, Volume 7, ch. 7, sec. 2 specifies under item 20:

"It is essential that the Section 4(f) information necessary for the required determination be consolidated in a separate statement or in a special section of an EIS. The Section 4(f) statement or special section in the EIS should be self-contained to the extent practicable. The Section 4(f) statement or special section of the EIS should list factors, reasons and effects that are used to judge each alternative not feasible and prudent for the highway improvement and the special measures planned to minimize harm to the Section 4(f) land. It may be necessary to repeat information contained in the EIS to eliminate unnecessary reference to the EIS."

The present director of the Central Transportation Planning Staff for Metropolitan Boston discussed the relevance of the 4(f) Section in a memorandum of June 7, 1971, to the then Mass. Secretary of Transportation, Alan Altshuler as follows:

"No project included in the Governor's Restudy had received such final approval by the federal government at the time of the effective date of section 4(f)....Highways proposed to go through any of the following significant public parklands are thus subject

The memorandum discusses the unanimous decision of the U.S. Supreme Court in "Citizens to Preserve Overton Park, Inc. v. Volpe, decided March 2, 1971, as follows:

"The Court then went on to construe the words "feasible and prudent." For the Secretary to approve a route through parkland on the basis that there was no feasible alternative, the Court concluded that the Secretary would have to find 'that as a matter of sound engineering it would not be feasible to build the highway along any other route.' The Court then turned to the work 'prudent' [and concluded]!...the very existence of the statute indicates that protection of parkland was to be given paramount importance. The few green havens that are public parks were not to be lost unless there were truly unusual factors present in a particular case or the cost or community disruption resulting from alternative routes reaches extraordinary magnitudes. If the statutes are to have any meaning, the Secretary cannot approve the destruction of parkland unless he finds that alternative routes present unique problems.'

Several conclusions follow from the Court's interpretation of Section 4(f):

1. Parklands and historic sites must be given "paramount importance" in weighing alternatives....
4. The case has in effect emphasized that Section 4(f) dramatically shifts the 'burden of proof' from those who wish to preserve public parklands to those who seek to put highways through them....
5. The search for alternative locations must be genuine and thorough...."

In spite of this clear expression that the 4(f) provision applies to the Alewife area, the Mass. EOTC now seems to challenge the Overton Park decision's application to the Alewife situation. The DEIS seems to reflect this attempt by a number of omissions and inaccuracies which will be discussed below. The DEIS moreover omits any detailed determination of alternatives as is clearly required by law.

III. INADEQUACIES OF THE DEIS

A. The Missing Half Mile

The DEIS does not deal adequately with the alignment and facilities of the Alewife station which are to the west of the station proper. Chapter VI which deals with the station states that "no Alewife Brook Reservation land would be required and negative impacts to the Reservation would be minimized" (VI-69) and that "a total of one to two acres

It is not until the next chapter that the draft EIS describes the tracks northwest of the station where the subway will run directly underneath the access viaduct to the garage, and the turnback and storage facilities are located (VII-1). Both access ramps and turnback facilities form an integral part of the Alewife station. Furthermore, the 4(f) inventory of Parks, Recreation and Historic Resources omits to list the public open space impacted by these station facilities (VII-54). As a result, both Chapter VI and VII 4(f) sections ignore the impacts west of the station.

B. The Impact Along the Half Mile of Alignment

The subway descends in a tunnel to a depth of 32 feet to cross under Alewife Brook in a boat section and continues along the B & M right-of-way north of Route Two where turnback and storage tracks are located. A tunnel of sufficient width cannot be confined to the right-of-way of the one track railroad; it would cut into the wetlands on both sides of Route Two which are owned by the MDC and the Town of Arlington. That impact would be permanent and not temporary, as the DEIS claims. The tunnel would create by its width and depth a barrier between the wetlands and the groundwater flow up-and down-stream of it. Noise and vibration from passing trains would make the abutting open spaces unfit for any fish and wildlife.

C. The Tunnel as the Foundation for the Viaduct

The access ramp from Route Two to the garage will run on a viaduct above the subway tunnel in the B & M right-of-way air right corridor. The DEIS has nothing to say about that massive structure of four lanes and shoulders which is much wider than the right-of-way. The viaduct will be constructed so as to rest upon the subway tunnel. Such joint massive highway-subway design has to be part of an DEIS; it cannot be ignored, as the DEIS does under the assumption of a "no-build" roadway alternative. It is common knowledge that the MDPW does not propose a no-build alternative and that its proposal includes a viaduct from Route Two to the garage. Therefore the assumption of the DEIS that the garage will be serviced from Alewife Brook Parkway through a curb cut is thoroughly unrealistic.

The massive access ramps will prevent sun light from reaching the Reservation land and water underneath. Moreover, noise, vibration, air and water pollution will eliminate the natural habitat for wildlife and destroy the ecological value of that part of the Reservation.

D. Wetlands Evaluation Criteria

The DEIS compares the Alewife area to habitat and wetlands in the vicinity (VI-81 to 83). That section depicts the Alewife area as

"buffered from the detrimental urban effects" while the areas in the vicinity are said to be larger and more diverse. Although that statement is correct as far as it goes, it omits to mention the better accessibility which the subway will provide to Alewife from the metropolitan core.

The EAR of February, 1976, had this to say: "The Alewife Brook/Little Pond wetlands are a regionally unique feature which furnishes habitat for a diverse assemblage of plants and animals not normally found in such a heavily urbanized area" (IX-66). The DEIS downplays the impact of the Red Line by claiming that "loss of vegetation and wildlife would not significantly alter the diversity of the wetlands species since similar habitats elsewhere in the wetlands would continue..." (emphasis of the DEIS, VI-86).

E. Indirect Impact

The DEIS claims that "current proposals which may be implemented in conjunction with the Red Line construction at Alewife specify that the east end of the Alewife area--bounded by Route Two, the transit station and the A.D. Little parking lot--would undergo extensive landscape treatment to develop an urban park setting. Thus one of the secondary impacts of the project would be the loss of dominant natural features from the east end of the wetlands " (VI-89). The DEIS attributes such proposals to the Alewife Task Force and its subcommittees.

It is correct that the Task Force has proposed the Linear Park concept. However, the Linear Park concept does not require the loss of any dominant natural features. This attribution by the DEIS is a complete misrepresentation of facts. Any loss of the easterly part of Alewife Brook/Little Pond wetlands is caused solely and fully by the current MBTA and MDPW proposals for subway and roadways related to the station and garage.

IV. INCONSISTENCIES AND CONTRADICTIONS IN THE DEIS

A. Section 4(f) and Impact of Tunnel, Storage and Turnback Tracks

Chapter VI of the DEIS states: "No Alewife Brook Reservation land would be required and negative impacts to the Reservation would be minimized" (VI-69) and "a total of one to two acres of Reservation land may be used temporarily during project construction" (VI-70). However, the special 4(f) section of chapter VI does not even mention this half mile of alignment west of the station on the Reservation land.

Chapter VII deals with the segment from Alewife Brook to, and including, Arlington Center station. Chapter VII mentions the tunnel section, turnback and storage facilities of Alewife Station (VII-1); but the 4(f) inventory and special 4(f) section of Chapter VII do not.

the DEIS fails to describe the public open space which the alignment traverses and its impact on that area (VII-54) as mandated by DOL.

B. Access to Station Parking Garage

The capital grant application calls for a 2000 car garage at Alewife Brook. The DEIS describes the garage; it even mentions the advantages to be derived from the roadway and ramp constructions and from their coordination with the subway construction (VI-24). However, for the most part the DEIS ignores the simultaneous, parallel but independent ramp and roadway study of the MDPW which the Federal Highway Administration (FHWA) is aiding and in which the Alewife Station Task Force is participating. Instead, the MBTA subway study proceeds under the fiction of a "no-build" MDPW road alternative.

Either the DEIS must be revised to consider the impact of the related highway "improvements" (now expected to be six lanes of ramps across the wetlands in addition to a connector road) or a separate environmental impact statement must be prepared by MDPW for FHWA.

V. ALTERNATIVES NOT CONSIDERED

A. Station Location C

The 4(f) statement is not in conformity with the requirement that all prudent and feasible alternatives have to be studied and selected in preference to the destruction and impacting of public parks and wetlands and that all measures possible must be taken to minimize damage to the environment. Despite this requirement, the BTPR never seriously considered station site C. The impact of the alignment required for site B was underestimated at the time the ATF was pressured into choosing it. A reminder of that fact can still be seen on page VI-16 of the DEIS: "Direct access from Route Two would require a one-lane inbound ramp and a one-lane outbound ramp to accommodate the projected 1,028 vehicles entering and exiting during peak hours." The MRWA and other environmentally concerned ATF members wanted to be cooperative and believed the assertion that the impact would be kept small enough to retain the viability of this most ecologically sensitive part of the Reservation.

Step by step things piled up: there would be two lanes in each direction; a connector road between Route 2 and Rindge Avenue Extension; five lanes leading from Route 2 into the Arthur D. Little parking lot (itself leased from the Reservation and due to be returned to it). Last October the MDPW introduced another destructive feature. Curb cuts were to be eliminated on the east bound lane of Route 2 and the businesses located there would have to be reached by an additional access road from the Lake Street interchange. This is in addition to the existing private access road to Arthur D. Little.

6. Modified Garage Plan

The estimated number of cars entering the garage in peak hours has mushroomed to 2000. When new alternatives in several variations were presented at the most recent ATF meeting of January 18, 1977, the Assistant Secretary of Transportation of Massachusetts was asked whether he would consider another alternative which might reduce the traffic to and from the garage and thus the need for access ramps. The purpose of the Alewife garage is the parking of cars whose drivers are expected to continue on by subway downtown. However, the Alewife garage is intended to serve also for the discharge of passengers of all feeder buses and of drop-off automobiles. "Would it be a better distribution of traffic to delete these vehicles from the garage where they have no business to be?" Dr. Meyer inquired. "Would it be better from a traffic viewpoint, and a better environmental concept, to provide lanes or bays alongside Alewife Brook Parkway, or in another configuration, to let buses and drop-off cars discharge their passengers and load them in the evening? A substantial lessening of environmental impact could well result," he concluded.

The top transportation people present at the meeting were adamant and refused to grant the consultant a single working day for an investigation of such a proposal which could overcome the present impasse between the different viewpoints between environmentalists, including the MDC, and the transportation agencies. They seem decided to ignore the 1966 DOT Act and the 1969 NEPA as well as Order 5660.1 of DOT which would require environmental enhancement of wetlands by new transportation facilities.

VI. COMPENSATIONS NOT CONSIDERED

Since the anticipated urbanization constitutes such a major indirect impact which may threaten the very survival of the present public open space at Alewife, specific compensation possibilities should have been discussed in the DEIS. Instead the opposite is occurring: continuing modifications of MDPW plans absorb more and more of the fragile remnants of open space at Alewife.

VII. CONCLUSION

For environmentally concerned civic groups like watershed associations it is disturbing that transportation agencies seem to be bent on flouting the law. MRWA wishes to reiterate that we are for a well designed Red Line Extension, that we wish the huge capital investment of public funds to result in a project of distinction, a project which enhances the social, economic and environmental future of the surrounding area and of the metropolitan region. We want a

project which is aware of and takes full advantage of coordination with parallel projects, like Section 208 of PL 92-500, the proposed comprehensive Mystic River system study of the MDC, and the willingness of the Bureau of Outdoor Recreation and the Corps of Engineers to participate in the rehabilitation of the neglected, overused Mystic River watershed. This is an unique opportunity to create at Alewife Brook a demonstration project which will be of lasting credit to UMTA, MBTA, and the respective governments they are serving. But we abhor as law abiding citizens the distressing fact that transportation agencies are not willing to level with us for the sake of cutting corners.

Submitted by

H. Meyer

Dr. Herbert M. Meyer
MRWA representative to the
Alewife Task Force

Paragraph
Number

Response

III-A

A new completely revised and expanded Section 4(f) Statement has been added to Chapter II of the Final Environmental Impact Statement. Include in this Statement is a detailed description of the impacts of the proposed project on the Alewife Reservation. (See pages II-145 thru II-150)

All public open space lands west of the Alewife Station potentially impacted by the Project are discussed in the Section 4(f) Statement. See pages II-145 thru II-155 for text on the Alewife Brook Reservation, Thorndike Playground, and Spy Pond Totlot.

III-B

The tunnel/cut-and-cover section north of the Alewife Station, including the three track turnback facility, can be confined to the right-of-way of the one track railroad. See Figure VI-2. Impacts to Reservation areas outside of the Boston and Maine Lexington Branch right-of-way would only occur during the construction phase. Impacts to the wetlands during construction would be temporary and eventually the area would return to its present state. A nearly parallel project - construction of two MDC sewers through the area - has taken place in the same area with no permanent impact on the Reservation.

Engineering techniques such as constructing the tunnel on a bed of gravel can be used to permit uninterrupted flow of groundwater. Noise and vibration would have little effect on fish and wildlife. Ambient noise levels at the Boston and Maine right-of-way are currently above what would be generated by the project in a tunnel/cut-and-cover.

MYSTIC RIVER WATERSHED ASSOCIATION, (Continued)

Paragraph
Number

Response

III-C

The access ramp from Route 2 would not run on a viaduct above the subway tunnel. It would be located west of the tunnel.

The MDPW Project is not a "a viaduct from Route 2 to the garage". It is a viaduct and surface roadway from Route 2 to Ridge Avenue Extension. Spiral drum ramps would connect the garage to this roadway.

The impacts of the proposed MDPW Route 2 Improvements will be described in the updated Environmental Overview Summary

The probable impacts of Red Line Extension construction activities are discussed on Pages II-145 to II-150 of Chapter II and Page VI-106 of the Construction Impacts section of Chapter VI. It is reasonable to state that compared to another alternative alignment from Alewife to Arlington Heights, the alignment following the Boston and Maine Lexington Branch right-of-way will have the least impact on the wetlands of the Reservation. Historically, this right-of-way has been disturbed three times before--during construction of the railroad, and construction of a 54-inch and 48-inch MDC sewer--and after each disturbance wildlife and vegetation has returned to normal as evidenced by our surveys of the area. Therefore, short-term impacts which do not create any irreversible harm are not severe impacts.

This question as well as other questions concerning the potential impacts of Red Line construction on the wetlands will be studied in detail in the upcoming MDC Mystic River Watershed Study.

MYSTIC RIVER WATERSHED ASSOCIATION, (Continued)

Paragraph
Number

Response

III-E

The proposal to develop the eastern end of the Alewife Brook Reservation comes from the MDC. It was presented in 1975 to the Alewife Task at one of their meetings. The text has been corrected to reference this proposal to the MDC and not to the Alewife Task Force.

In addition to MDC's proposal to develop an Urban Park setting in the east end of the Alewife Area, A.D. Little is also negotiating a trade for land in this area.

IV-A

A full discussion and analysis of these concerns are given in the Section 4(f) Statement included in Chapter II of the Final EIS. See pages II-127 thru II-181. The half mile of alignment beyond the Alewife Station falls almost entirely within the Boston and Maine Lexington Branch right-of-way. Only a small, 600 sq. ft. permanent easement at the northeast corner of the crossing of the Lexington Branch and Freight Cutoff rights-of-way is required for construction of the Project.

MYSTIC RIVER WATERSHED ASSOCIATION, (Continued)

<u>Paragraph Number</u>	<u>Response</u>
IV-B	The Alewife Chapter of the Final Environmental Impact Statement has been expanded to include a summary of MDPW's Draft Updated Environmental Summary for the proposed Highway Improvements. Chapter VI has also been modified to include discussion of the proposed Route 2/Rindge Avenue Extension Connector Road.
V-A	Site "B" was selected over site "C" for a station location at Alewife for many reasons which are documented in Chapter VI of the Final Environmental Impact Statement. Environmentally, an alignment through "C" site and onto Arlington would have a greater impact because it would require taking a portion of the wetland area north of Route 2 in East Arlington. This area is much more important as a natural resource than the area of the Alewife Brook Reservation impacted by the alignment following the Lexington Branch right-of-way. The alignment through the "C" site would also require construction through the MDC Reservation and underneath Alewife Brook. In addition, it would place the Project much closer to the residences of East Arlington.
V-B	The merits of these alternatives have been addressed at Task Force meetings. However, they did not become part of the Project because other alternatives were more effective in achieving Project goals.
VI	Compensation in the form of land replacement will be studied as part of the Phase II work for the highway improvements.

INDIVIDUAL COMMENTS

FILE

MA-23-9008

RECEIVED

JAN 10 1977

UCA-30

See

45 JASON ST

ARLINGTON

MASS. 02174

JANUARY 4, 1977

Peter Benjamin,
Director, Office of Program Analysis,
U.M.T.A.

U.S. Dept. of Transportation,
400 7th St SW
WASHINGTON, D.C. 20590.

Dear Mr Benjamin,

- ① These comments refer to the Draft Environmental Impact Statement on the Red Line Extension.
- ② First, this document is not complete. Page II-96 and subsequent pages refer to Figures and Tables concerned with Air Quality that appear in "SDV". The document SDV is not available at the Public Library in Arlington, where I examined the Impact Statement, and the Reference Librarian is unaware of its existence.

Page II-97 refers to "hot spots", but their location and the appropriate concentrations are not quoted. At one of the public hearings I enquired about present CO levels and future levels in Arlington Center. Apparently CO levels have not been measured in Arlington Center. At Harvard Square they exceed the EPA standard 8 hour value 60-70% of the time (p III-71). Translation of the terminology to Arlington Center may well produce equivalent levels there. The forecast on p III-7 should be based on present day measurements.

- ④ The use of Chatham radiosonde data to represent Boston is a questionable procedure. Boston generates its own "heat island" as is well known and Chatham is far removed from its influence. It would be more appropriate to use the special set of soundings made by NOAA personnel at MIT in 1970-71 with low-rate ϕ -rise balloons.
- ⑤ Fig. VIII-3 shows seven traffic lanes outside the new Unitarian Church in Arlington Center and street widening is suggested to take care of the extra traffic.
- ⑥ I object strongly to any more street widening in Arlington. Mass Avenue is already over 100 ft wide in places and creates a barrier for the pedestrian shopper.
- ⑦ In my view plans should be made to decrease traffic in Arlington, not increase it. An extension to Alewife is certainly in order as that will decrease traffic in Cambridge. Then I believe plans should be made to cater to the people of Arlington there are 55000 of us. I think three or four stops are warranted in Arlington - all for pedestrians. For example one at Lake Street could accommodate a large number of residents. In no case should the line terminate in Arlington - even on a "temporary" basis. We must plan for 2000 when global oil supplies will be running out and cars may well be a luxury. The line should go to Rt 128 or Hanson Field and a garage built there, as the only one apart from Alewife.

⑧ I therefore urge building rapidly to Alewife :
replanning a line from Alewife to Rt 128 to cater for
pedestrians, with a significant number of stops as in
Boston, and resubmission of a new impact statement after
public hearing for this second portion of the line. The
revised statement should also include a realistic estimate
of the cost to the taxpayers of Burlington (building and
running) over the next 20 years. I am not writing as
an outsider, having ridden the bus and subway daily
for 20 years, including four years recently when I was
unable to afford a car so that all six of my family made
all their trips to Boston by bus and subway.

yours sincerely

Reginald E Newell

<u>Paragraph Number</u>	<u>Response</u>
2	Air quality data previously contained in the Supplemental Volume (SDV) is included in the Final Environmental Impact Statement as Appendix H.
3	<p>Approximate CO levels have been measured for Arlington Center. Levels have also been projected for 1980 with the no-build case and the three build alternatives. All 1980 cases are markedly lower than the 1974 base year levels. See Page VI-68 and Table VII-16.</p> <p>Arlington Center would not serve as either a temporary or permanent terminal.</p> <p>Figure 33 of Appendix H shows the modeled results used for selecting the "hot spots" for this study, namely: the Harvard Square; Davis Square; Alewife; Arlington Center; and Arlington Heights Areas.</p>
4	Worst and most probable meteorological conditions evolved from the wind rose analysis; the probability analysis of the historic atmospheric stability data aided with the radiosonde observations at Chatham; and carbon monoxide measurements at four state-operated air quality sampling stations were adopted for computation input. Using Chatham upper air data adds a degree of conservatism to the analysis, because the urban heat island in the Boston area tends to moderate the formation of extremely sharp ground-based inversions, which can otherwise result in a potential for greatly elevated pollutant levels.
16	Street widening was not proposed for Arlington Center; what was proposed was a rechannelling of traffic lanes to facilitate through traffic and right and left hand turns. Development of the Arlington Center Station with its free passage mezzanine beneath Massachusetts Avenue would allow safe uninterrupted movement from one side of Massachusetts Avenue to the other at Arlington Center. This would help to eliminate the barrier effect existing under present conditions.

Paragraph
Number

Response

7

Existing and Post Red Line traffic volumes and intersection geometrics are shown in Figures VII-5 and VII-6. As mentioned on Page VII-20 , traffic volumes cause substantial delays during the peak periods. Implementation of the recommendations on traffic signals, channelization and street-utilization would alleviate, to a considerable degree, traffic congestion.

The Red Line Extension is being planned to ultimately extend to Route 128 where there would be a parking garage for about 2,000 cars. The purpose of the Minuteman Area Transportation Study is to evaluate different transportation packages for the corridor between Arlington Heights and Route 128.

The possibility of a Lake Street Station was explored during the BTPR Study. It was dropped because of operational (too close to Alewife Station) and site (no room for kiss-and-fide or bus drop-off) disadvantages. Boardings at a Lake Street Station would only be walk-ins (about 1,000-1,500 maximum) which does not justify incurring the capital expense of station construction.

8

Estimates of the impact of the project on local MBTA assessments is given in Chapter II, see page II-52. These estimates, however, are for opening day only. Any projects beyond that date would be, at the least, guesses because of the many variables which affect the assessment equation.

MA 23-100
FILE

RECEIVED

FEB 1 - 1977

UTA-30

Susan Halson
26 Brooks Ave.

Quincy, Mass. 02174

January 24, 1976

*Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
Department of Transportation
Massif Building
400 7th Street S.W.
Washington, D.C. 20590*

Re: Project # MA-23-9008

Dear Mr. Benjamin,

I am writing to you as a town meeting member of Precinct 4, East Quincy, and as a member of the Red Line Summer Study Task Force of Quincy, and of course as a private citizen. I am representing the opinion of a large majority of my constituents, including

cal businessmen. Our request is not only that you return the MBTA application and Environmental statement to Mr. Robert R. Kiley, Chairman of the N.B.T.H., but that you implore the MBTA to investigate an alternate route that would not hurt our environment and our town so terribly.

I am just as worried about air pollution and our potential fuel shortage as the next person. But I resent having the Red Line subway sold to us by the MBTA, some of our political leaders, and some of our local newspapers on the basis that it could save time and money for its riders and that it could help the town increase its tax base and give us a linear park on the right of way, and help the state's job market. These debatable benefits should not be used to make the people of Arlington feel guilty enough to sacrifice their town.

A major point I would like to make is

1111-25-1000 11/11/1000 Page 1
the DEIS did not study the impact of the
tal project. Its admitted purpose was just
to study the area immediately surrounding the
station locations. The areas adjacent to the right-
of-way between stations were virtually ignored, such
as several playgrounds, bodies of water, parks, a public
high school, not to mention private homes lining the
right-of-way (the B & M Railroad Tracks) all the way
through the entire town. ^{There are only 4 trains a day on the tracks.} I feel that even the DEIS's
study of station locations was not thorough enough.
I feel that when the impacts appeared to be too
complicated and too numerous and too horrible they
were just white washed or swept under the rug.
This situation applies especially to the Glenview Station.
The Glenview task force included some citizens who
are and always have been opposed to the station and
are more to the garage for very good reasons. But
for some reason they were made to feel that in
the meantime they should spend their time discussing
tailed plans of the interior of the 2000 car

ing garage they did not want. Also, in spite of
 grave danger of flooding in the Allwip area of
 bridge, Belmont and Arlington and the danger
 the Allwip Brook, Spy Pond, Frost Pond, and
 the Pond, the MBTA and its engineers have made
 attempt to inform the officials of these towns and
 at with them in reference to these problems.

I often get the feeling that part of the job of
 these government employees of these projects is to sit
 at these meetings waiting for the opponents to the
 projects to give up. But considering that the
 opponents are unpaid volunteers, it is important to
 state that the opposition has increased in numbers
 citizens and in their vehemence.

Whatever the response to your office has
 in the last 60 days, I would appreciate your
 keeping in mind that these 60 days of citizen
 response fell on Thanksgiving, Christmas, and
 in years, not to mention the coldest week.

hottest winter in years.

I agree with those people that feel that the repercussions of ending the line at Alewife are equally as bad as extending it further. Unless more thought is put into this project Burlington will face whether the line stops at Alewife, in Burlington, or in East Burlington.

My faith and that of many others in environmental studies is almost gone. When you read the MBTA's response to comments back in March, 1976 and see that our questions and concerns were answered only if the MBTA wanted to answer. And when they did answer they just pulled their answers out of the original Environmental Analysis Report of February 1976 which we had already read. Nothing seems sacred anymore and I am not even a parishioner of St. Ignace Church. Just to lighten things a bit but not much,

would like you to see what appeared on the front page of the Arlington Advocate on January 6, 1976. It was part of the results of a telephone survey of 10 Arlington Residents which I could write another page about, the survey not the residents.

Analysis of the data shows that hard-core opponents of the Red Line extension are white workers with a high school education between \$10,000 and \$15,000, between 45 and 55 years of age. They are well-educated and own two cars. This leads the surveyors to conclude that "it will be difficult to persuade them that the Red Line extension is a good idea."

Those in favor of the extension cited a variety of reasons, the most popular one being that traffic problems would be alleviated as Mass. Avenue becomes less congested. Other respondents cited advantages such as mobility, convenience, and increased business. Four percent expressed reservation questioning the effect on St. Agnes School and stating a preference that the system be entirely underground.

Opponents were found to be primarily concerned with the line's affect on the physical character of the town and feared

that neighborhoods would deteriorate. Some respondents mentioned excessive growth, traffic and parking problems. Eight percent are concerned about the financial repercussions on the tax rate.

Some opponents had very specific concerns, and the survey report notes that these people want to know if the line will be underground, will go to 128, where the terminal will be, and the affect it will have on St. Agnes parish.

I would like you to know that I am 32 years old, college graduate, and rarely get to see the one car that my family has. I like the part about reservations. In reference to traffic, there have been ~~no~~ traffic accidents, but how good can it get when one town is housing a station meant to serve Lexington, Medford, Belmont, Winchester, or forth? As for mobility, it would be nice if there was. But most people in this town will need a bus to get to the stations. The issue of increased business has been a very controversial one. Our neighboring towns are quite well without a subway. As for neighborhoods

deteriorating, if you look at a map of the whole MBTA subway system, there is hardly a town or city on it where people are rushing to buy a home in. Lastly, as you can see, the people wanted to know if the line would go to Route 128. We were told last summer by the MBTA people that the likely outcome of the Feasibility Study for Lexington and the rest of the Northwest Corridor was that it was not worth while financially. So why is reference to Route 128 constantly being made? It's a joke. By the way, the Feasibility Study is done and it is not worth their while to go beyond Arlington.

I thank you for taking the time to read my letter. I would really appreciate your acknowledging receipt of this letter and it's acceptance as part of the 60 days of citizen response.

Sincerely,

Susan Haloon

26 Brooks Ave.

Arlington, Mass. 02174

SUSAN HALOON, January 24, 1977

Paragraph
Number

Response

All

The concerns of Arlington residents have resulted in significant modifications of the DEIS and more thorough discussions of impact issues.

121 Oxford Street
Cambridge, Massachusetts 02140
19 December 1976

Mr. Peter Benjamin
Director, Office of Program Analysis
Urban Mass Transportation Administration
U. S. Department of Transportation
Washington, DC

RE: Draft EIS : Project MA-23-9008

Dear Mr. Benjamin:

- [1] The Draft Environmental Impact Statement for the Red Line Extension from Harvard Square to Arlington Heights is notably deficient in the analyses of (1) differences between existing and future rapid transit and local bus operating costs associated with the project, (2) the anticipated increases in the total net operating cost of the system, (3) the apportionment of such additional operating (and capital) costs to the member cities and towns of the MBTA District, and (4) the resulting burden on the local property tax and other tax structures used to support the MBTA deficit.
- [2] Any impacts on the net cost of service for the MBTA, which presently is in excess of \$100 per capita for the region, should be carefully considered in evaluating this project and all other proposed projects with similar effects. It is not my intention to judge whether the proposed project will have a negative impact in the area of state and local finance; such judgments are impossible based on the information presented in the Draft EIS. However, I do believe that the question is a very serious one given the present level of system deficit, the expansion plans of the MBTA, the historical rate of increase of MBTA costs, and the serious financial problems of the Commonwealth and several member communities of the District.
- [3] As a transportation investment the project may be warranted, although the benefit/cost analysis presented makes no attempt to apply rigorous standards of transportation project analysis and is therefore of little guidance to project evaluation. However, there are issues of "who benefits" and "who pays" that are not addressed at all. Given the almost complete support of MBTA costs by tax payers, no project analysis can be considered complete until it addresses the implications of the project for future public financing of MBTA net costs.

Yours truly,


Brian C. Kullman

cc: State Clearinghouse
Mr. R. Easler, City of
Cambridge

DEC 29 1976

BRIAN KULLMAN, December 19, 1976

Paragraph
Number

Response

1

A new section discussing the effects of the Red Line Extension on the MBTA assessments has been added to Chapter II. See page II-52 This section contains information on existing and projected deficits for member cities and towns of the MBTA District.

MA-23-9008
B & M REALTY TRUST6 Beacon Street
Boston, Mass. 02108

3719

JAN 19 1977

UCA-30

January 12, 1977

Mr. Peter Benjamin
Office of Program Analysis
Urban Mass. Transportation Adm.
Washington D. C. 20590

RE: Red Line Extension
Harvard Square to
Arlington Heights
Boston, Massachusetts
Draft EISMA 23-9008

Dear Sir:

- [1] It has been brought to our attention that in Volume One Page IV-5 under "Right of Way Requirements" there appears "1-55 White Street -- Commercial -- Partial land taking for station entrance and permanent easement". This is not clearly spelled out.
- [2] We understand your latest plan is to place the entrance (and exit from) to the station on the sidewalk (owned by the city) which borders Somerville Avenue. Also, we understand you now do not intend to disturb the surface of the parking lot of the Shopping Center.
- [3] In view of the above we feel there should be an amendment to Table IV-1.

Please advise.

Very truly yours,

B & M REALTY TRUST

By

Benjamin Brown
Trustee

BB:w

Paragraph
Number

Response

1

See Page IV-5, Table IV-1.

27 Jason Street
Arlington, Massachusetts 02174

*See
1/25 encl.*

January 25, 1977

RECEIVED

JAN 28 1977

UCA-33

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U. S. Dept. of Transportation
400 7th Street SW
Washington, D. C. 20590

Red Line Extension - Arlington, Massachusetts

Dear Sir:

By this time, your office will have received many comments on the Draft Environmental Impact Statement detailing numerous deficiencies in the statement and objections to the project as presently proposed.

I write from three different perspectives: as a daily user of and believer in mass transit, as a citizen deeply concerned with the welfare of my own Town and metropolitan Boston, and as president of The Arlington Historical Society with a particular concern for the preservation of the remaining historical environment of the community.

From all three perspectives, I must call to your attention deficiencies, not in the D.E.I.S. as such, but in the conceptual premises upon which the whole proposal is based.

If we must assume that the federal government is unwilling or unable to introduce realistic automobile disincentives, then the least that can be done is to keep excessive automobile traffic away from environmentally sensitive areas. The present plan would fill and/or disrupt extensive wetland and flood plain areas at Alewife and bring intolerable traffic levels from other communities to places such as Arlington Centre and Arlington Heights, along with development pressures that will cause irreparable damage to the natural and historical environments of these areas. A shift westward of the Heights terminus would impact the Great Meadows, the only large open tract owned by the Town of Arlington, located across the border in Lexington.

Mr. Peter Benjamin, Director

-2-

January 25, 1977

The Town of Arlington already has the seventh highest population density of any community in the Commonwealth and can ill afford to absorb either more development or more automotive traffic if any reasonable quality of life is to be preserved for its 55,000 residents. The termination of rail freight service will either deprive us of several sources of industrial tax revenue, or bring to the Town thousands of additional trucks.

Land speculation due to the possible subway station in Arlington Centre has already caused the loss of one building of historic significance and considerable disruption to local merchants. If the present plan is approved, the continuation of speculation, developer greed, street widenings and traffic will very likely destroy the last vestiges of our old New England town centre.

The region does need improved mass transit, but not at the expense of Arlington which has already borne more than its share of the burden and actually has a good public transit system. Accordingly, I suggest that so much of the capital grant application as relates to the extension beyond Davis Square be rejected and that the following plan receive serious consideration.

From Davis Square, continue to Alewife for an interchange and then continue to a terminus at the Cambridge landfill area. The latter site could better and more conveniently absorb traffic and feeder bus routes from Belmont and Watertown, as well as servicing a heavily populated part of Cambridge. From Alewife, a light rail system could go along the Concord Turnpike (Route 2) to a point at or beyond Route 128 which would be an ideal collection point for traffic from west, north and south. A garage structure could more readily be accommodated there than in the Alewife area. The far cheaper cost of light rail would offset the supposed lack of ridership at a Route 128 terminus. Arlington and Belmont (along with one of our greatest natural assets, Spy Pond) have already suffered all the impacts from the ill-advised construction of Route 2 as an excessively wide highway through heavily residential areas so that that Route can be used without much further impact.

Feeder bus routes could bring passengers to stations along Route 2 from Arlington and Belmont, while other routes could bring Arlington and Winchester commuters to the Orange Line station at

1 2 5
Mr. Peter Benjamin, Director

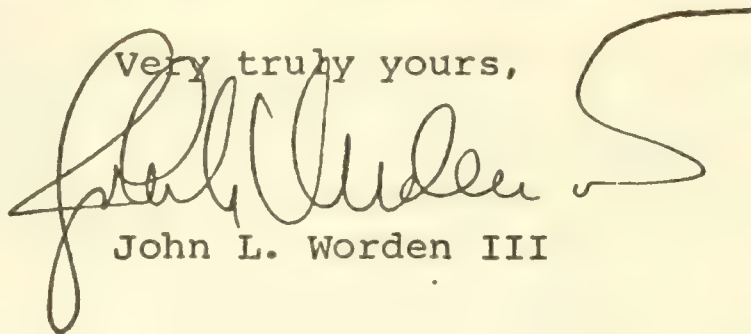
-3-

January 25, 1977

Wellington.

These suggestions, if carried out, would create a better system, less subject to the automobile and less devastating to the communities involved. They would also, I believe, be more appropriate when the age of the automobile ends in the next two decades.

Very truly yours,

A handwritten signature in dark ink, appearing to read "John L. Worden III", with a large, sweeping flourish extending to the right.

John L. Worden III

Paragraph

Response

All

The transit mode, engineering alignment and profile, and station locations, proposed for the Red Line Extension are the result of many years of study of alternatives, beginning with the 1967 Harvard Square to Alewife Study, followed by the 1971 BTPR Study, and finally with the present Red Line Extension Environmental Impact Study.

As a complete system for transportation services between Harvard Square and Arlington Heights, it has been demonstrated through cost/benefit analysis that the proposed Project is the optimum combination of modes, alignments and profiles, and station locations. Most benefits, however, are quite difficult to measure in quantitative units (e.g., service to elderly, handicapped, and those without jobs; reduced traffic congestion; increased accessibility to employment and cultural opportunities; better air quality; reduction in construction disruptions) when compared to measuring the hard costs of constructing and operating the system. Thus, there will also be some unclarity connected with comparing project costs with project benefits.

FILE

Due
Jan. 1978

Stewart Sanders
243 Claflin St.
Belmont, MA. 02178

January 27, 1977

RECEIVED

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, D.C. 20590

FEB 1 - 1977

UTA-30

Re.: Draft Environmental Impact Statement, Red Line Extension
Harvard Square to Arlington Heights, Boston, Massachusetts,
MA-23-9008, November, 1976

Dear Mr. Benjamin,

I call your attention to the following information I have that may be useful in treating more accurately matters considered in the sections II-123, 124, VI-65, 70, 83, 86, 88, 90, and Appendix C. My major research has been in habitats of birds and other wildlife. I also canoe, cross-country ski, and enjoy the out-of-doors.

In general, I favor public transportation. I am pleased that highways are not being pushed across open spaces and into Boston as much as a few years ago. On the other hand I regret that once again when looking for space people are planning to take some green open space, wetland, and part of a pond.

A new perspective is on the horizon. I think we all realize now that we have over populated America, and we want fewer people; though none of us is volunteering to give up our space on earth! There may be a day when the hope for fewer people will be realized in the next century. It may be our responsibility to tread lightly on wetlands and open space. Do you remember the "temporary buildings" on the mall in Washington, D.C., built during the crisis of World War II? They did eventually come down!

1. A description of wildlife and other features and activity based largely on my field trip on Wednesday, January 19, 1977, 10 a.m. - 12 a.m. 20°F. enclosed

2. map enclosed

3. photographs enclosed

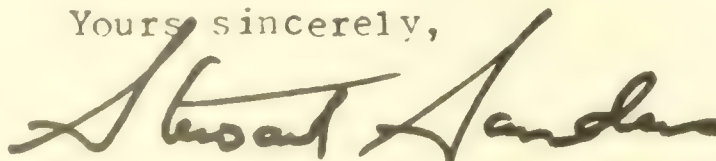
4. list of birds enclosed

5. other information and references as follows: VI-70. While this development goes on at the east end, there may be construction at what you refer to as the more environmentally sensitive west end. The owner of a piece of land adjacent to Perch Pond has announced his intentions to cover the brook and construct a 15 story office building. Ref. VI-83: owners of the Munroe Brook woods and wetland have announced their intention to construct a major housing development there.

Ref. VI-65: people have recently journeyed by canoes from Little Pond to Boston Harbor; VI-65: Belmont residents have a new artificial ice skating rink near Belmont Center.

6. Report on sensitive wildlife, Blair Pond to Little River, Belmont and Cambridge, December 3, 1976, not included.

Yours sincerely,


Stewart Sanders

Little River from Yate's Pond and Alewife Brook Parkway to Perch Pond and DiGiovanni's land, a description of wildlife and other features and activity based largely on my field trip on Wednesday, January 10, 1977, 10 a.m. - 12 a.m. 2025. slight breeze, approx. 2 feet of snow

Clear and sunny

Stewart Sanders, 213 Claflin St., Belmont, MA. phone 480-3120

Letters refer to locations on map.

A. Observations: I found a concentration of rabbit tracks and some mouse tracks along banks of a ditch, among dense brush, and some at the river's edge. Sumac bark was chewed.

Interpretation: Alder is a significant wildlife food source. Cottontails are eating young sumac bark and buds. Mice are vital food for a falcon. Eastern Cottontail home range is 2 to 6 acres. Maximum density is two per acre. I estimate 3 rabbits and several mice live here. photos A-1 and 3.

B. Obs.: dense concentration of rabbit tracks, also tracks of Ring-necked Pheasant, mice, and people. 16 Mallards flew up from corner of Arthur D. Little Co. building; nests of song birds are in the brush.

Interp.: 2 cottontails and several White-footed Mice. B-7 and 8

C. People gain access along railroad tracks under the highway at C₁; over the river on the railroad bridge at C₂ there is much people travel; a few people come across the slope above the river at C₃.

I estimate 20 people per week or two people ten times each per week come through here. photo C₂-9

D. Briars and sumac; a few rabbit tracks.

This is excellent cover; it offers protection from dogs, people, and falcon. It also provides food.

E. This is approximately the route people traveled in canoes in the last century from Fresh Pond to Boston Harbor via Alewife Brook and the Mystic River, which is described in William Brewster, Memoirs of the Nuttall Ornithological Club, No. IV, Birds of the Cambridge Region of Massachusetts, published in Cambridge, July, 1906. The channel is frozen now. Its borders have dense growth of Knotweed and briars. A few shade trees contribute to the picturesque, secluded site.

There is a dense concentration of cottontail tracks and one mouse track. I found a rabbit hole showing signs of current use.

It has been about six days since the previous snow fall. Estimate: 2 cottontails ; 3 mice. photos E-13, 15, 16

F. A kestrel, which is a small falcon, perched on the Dewey and Army side of the highway was visible under the bridge as it took flight. People including a skier gain access along the tracks.

G. Rabbit tracks numerous. I disturbed a pheasant from its rest. The sun feels warm on this slope. People have been sliding down the slope. There are large willows and cattails at the edge of the pond.

H. Briars; small stream bed contains concentration of rabbit tracks, droppings, and a hole in use. Est. 1 cottontail photo H-11

Little River description, page two

I. Tracks of pheasant and rabbit are in grove of sumacs. Path shows people travel. Interp.: 12 people in a week pass through here parallel to the railroad tracks. 3 rabbits, a few mice, one Downy Woodpecker, and 5 pheasants from the area visit here.

J. Alders, crabapple tree; rabbits have been eating small sumac stems; mouse tracks; Kestrel perched here and flew across the river.

A Kestrel is a regular resident in the Little River habitat. It also visits the former Cambridge dump site and Fresh Pond. Only one is seen and no evidence of breeding,

K. Mouse tracks and drops of blood and droppings. A raptor, probably the Kestrel, made a kill here within the last 24 hours.

L. People access along the railroad tracks; I estimate 12 a week. (In November a dozen youths trapped and cooked a rabbit on the DiGiovanni land.) I found the cross-country skiing throughout the area excellent.

M. Winter feed is available from weeds still holding seeds. Several song bird nests are in the brush; one is 3' above the ground. A dog track from area N reached this far. I found an active rabbit hole; Chickadees were nearby; people tracks from N.

Interp.: A pair of Song Sparrows nested here in 1976.

N. Sumac grove; dense rabbit tracks; water is open and flowing; 3 pheasants rested in the protection of thicket at N₂. Mouse and rabbit tracks along banks of the stream; rabbit tracks go up the steep slopes of the dirt mounds; Goldfinches calling overhead; 5 Black Ducks flew over low and stopped at Perch Pond. Briar patch covers about 100 square feet.

Interp.: briars are Blackberry. Black Ducks need breeding success and habitat; they feed and rest here. In the summer 6-12 Black Crowned Night Herons rest in the trees on this side of Perch Pond. They feed and rest along the river between the pond and Little Pond. The Kestrel makes regular visits around here. The rabbit production could help feed the Red Tailed Hawk that hunts within two miles of here. photo N-12

Habitat summary: The Little River area from Dewey and Almy to Perch Pond sustains one Kestrel, 10-15 cottontails, a population of mice, 5 pheasants, and several song birds in the winter. Sections D, E, F, G, H, and N are significant in their present state to people and wildlife and have historical significance as well; all are presently being considered for construction (destruction).

S. Sanders



LITTLE POND to YATE'S POND
record of Birds

MASSACHUSETTS AUDUBON SOCIETY

SOUTH GREAT ROAD, LINCOLN, MASSACHUSETTS 01773

A CHECKLIST OF MASSACHUSETTS BIRDS

Observed by Stewart Sanders, Charlotte Wyman*, Lee Taylor, Bob Stymiest

Address 243 Clafin Street, Belmont, MA. 02178

Total Number of Birds Checked * "Block worker" Atlas Project, MASS. Breeding Bird Survey 1974-78 Year 1974-76

This list is arranged according to the Fifth Edition (1957) of the Check-List to the American Ornithologists' Union.

Name of Species	Locality	Date Seen	Name of Species	Locality	Date Seen
Common Loon			European Widgeon		
Red-throated Loon			American Widgeon		11/4/76
Red-necked Grebe			Shoveler		
Horned Grebe			Wood Duck		
Pied-billed Grebe			Redhead		
Cory's Shearwater			Ring-necked Duck		
Greater Shearwater			Canvasback		
Sooty Shearwater			Greater Scaup Duck		
Wilson's Petrel			Lesser Scaup Duck		
Gannet			Common Goldeneye		
Great Cormorant			Barrow's Goldeneye		
Double-crested Cormorant			Bufflehead		
Great Blue Heron	Occasional visitor	fall '76	Oldsquaw		
Green Heron	1974 report*		Harlequin Duck		
Little Blue Heron			Common Eider		
Cattle Egret			King Eider		
Common Egret			White-winged Scoter		
Snowy Egret			Surf Scoter		
Black-crowned Night Heron	N rest, feed regular		Common Scoter		
Yellow-crowned Night Heron			Ruddy Duck		
Least Bittern			Hooded Merganser		
American Bittern			Common Merganser		
Mute Swan			Red-breasted Merganser		
Canada Goose	1974 report		Turkey Vulture		
Brant			Goshawk		
Snow Goose			Sharp-shinned Hawk		
Mallard	breeder	all year	Cooper's Hawk		
Black Duck	visiter	all year	Red-tailed Hawk	1974 report	
Gadwall			Red-shouldered Hawk		
Pintail			Broad-winged Hawk		
Green-winged Teal			Rough-legged Hawk		
Blue-winged Teal			Bald Eagle		

Name of Species	Locality	Date Seen	Name of Species	Locality	Date Seen
Marsh Hawk			Marbled Godwit		
Osprey	known to be near by		Hudsonian Godwit		
Peregrine Falcon			Sanderling		
Pigeon Hawk			Red Phalarope		
Sparrow Hawk	1 feeding, resting all year		Wilson's Phalarope		
Ruffed Grouse			Northern Phalarope		
Bobwhite			Pomarine Jaeger		
Ring-necked Pheasant	5-10 breeder all year		Parasitic Jaeger		
King Rail			Glaucous Gull		
Clapper Rail			Iceland Gull		
Virginia Rail			Great Black-backed Gull	1974 report	
Sora Rail	observed	6/74	Herring Gull	visitor	all year
Common Gallinule			Ring-billed Gull	visitor	all year
American Coot	1974 report		Black-headed Gull		
Semipalmated Plover			Laughing Gull		
Piping Plover			Bonaparte's Gull		
Killdeer	visitor	6/74	Little Gull		
American Golden Plover			Black-legged Kittiwake		
Black-bellied Plover			Forster's Tern		
Ruddy Turnstone			Common Tern		
American Woodcock	4 courtship flights	74, 76	Arctic Tern		
Common Snipe	visitor	12/76	Roseate Tern		
Whimbrel			Least Tern		
Upland Plover			Black Tern		
Spotted Sandpiper			Black Skimmer		
Solitary Sandpiper			Razorbill		
Willet			Thick-billed Murre		
Greater Yellowlegs			Dovekie		
Lesser Yellowlegs			Black Guillemot		
Knot			Rock Dove		all year
Purple Sandpiper			Mourning Dove	breeder	
Pectoral Sandpiper			Yellow-billed Cuckoo		
White-rumped Sandpiper			Black-billed Cuckoo		
Baird's Sandpiper			Barn Owl		
Least Sandpiper			Screech Owl		
Dunlin			Great Horned Owl		
Short-billed Dowitcher			Snowy Owl		
Long-billed Dowitcher			Barred Owl		
Stilt Sandpiper			Long-eared Owl		
Semipalmated Sandpiper			Short-eared Owl		
Western Sandpiper			Saw-whet Owl		
Buff-breasted Sandpiper			Whip-poor-will		

Name of Species	Locality	Date Seen	Name of Species	Locality	Date Seen
Common Nighthawk			Hermit Thrush		
Chimney Swift	feeding	Summer	Swainson's Thrush		
Ruby-throated Hummingbird			Gray-cheeked Thrush		
Belted Kingfisher			Veery		
Yellow-shafted Flicker	feeding	Summer	Eastern Bluebird		
Pileated Woodpecker			Blue-gray Gnatcatcher		
Red-headed Woodpecker			Golden-crowned Kinglet		
Yellow-bellied Sapsucker			Ruby-crowned Kinglet		11/4/76
Hairy Woodpecker			Water Pipit		
Downy Woodpecker	Breeder	all year	Cedar Waxwing		
Eastern Kingbird	Visitor	Summer	Northern Shrike		
Western Kingbird			Loggerhead Shrike		
Great Crested Flycatcher	visitor	Summer	Starling	Breeder	all year
Eastern Phoebe		Summer	White-eyed Vireo		
Yellow-bellied Flycatcher			Yellow-throated Vireo		
Traill's Flycatcher (Willow Flycatcher)*		Summer	Solitary Vireo		
Least Flycatcher			Red-eyed Vireo		
Eastern Wood Pewee			Philadelphia Vireo		
Olive-sided Flycatcher			Warbling Vireo	visitor	Summer
Horned Lark			Black-and-White Warbler		
Tree Swallow		Summer	Worm-eating Warbler		
Bank Swallow			Golden-winged Warbler		
Rough-winged Swallow	visitor	Summer	Blue-winged Warbler		
Barn Swallow	1974 report		Tennessee Warbler		
Cliff Swallow			Orange-crowned Warbler		
Purple Martin			Nashville Warbler		
Blue Jay	breeder	all year	Parula Warbler		
Common Crow		all year	Yellow Warbler	visitor	Summer
Black-capped Chickadee		all year	Magnolia Warbler		
Tufted Titmouse	visitor		Cape May Warbler		
White-breasted Nuthatch	visitor		Black-throated Blue Warbler		
Red-breasted Nuthatch			Myrtle Warbler		11/4/76
Brown Creeper			Black-throated Green Warbler		
House Wren	visitor		Blackburnian Warbler		
Winter Wren			Chestnut-sided Warbler		
Carolina Wren			Bay-breasted Warbler		
Long-billed Marsh Wren			Blackpoll Warbler		
Mockingbird	Breeder	all year	Pine Warbler		
Catbird	Breeder	Summer	Prairie Warbler		
Brown Thrasher	visitor		Palm Warbler		11/4/76
Robin	Breeder	all year	Ovenbird		
Wood Thrush			Northern Waterthrush		

New A.O.U. species names as -294- parenthesis

STEWART SANDERS, January 27, 1977

Paragraph

Response

4

Information provided by your field survey of the Reservation on January 19, 1977, has been used to expand the text. See Appendix C.

T23 U.S. Dept. of Trans.

U73 Urban Mass Trans. Admns.

T
U V.2

Red Line Extension-Harvard
Square to Arlington Heights.

T23

U 73

Vol.2

